



Success Factors for Business Digitalisation

Success Factors for Business Digitalisation

Bertelsmann Stiftung (ed.)

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With the kind support of the Otto Group
Robert Hägelen

A study by the Fraunhofer Institute for Industrial Engineering IAO on behalf
of the Bertelsmann Stiftung, together with the following 15 companies
(in alphabetical order):

- CEWE Foundation & Co KGaA
- comdirect bank AG
- comspace GmbH & Co KG
- Deutsche Kreditbank AG
- Deutscher Technologiedienst GmbH (DTD)
- Manufactum GmbH
- Maschinenfabrik Reinhausen GmbH
- Otto GmbH & Co. KG
- Pflegezentrum Haack-Yol e. K.
- Pickert & Partner GmbH
- R+V Versicherung AG
- Sattlerei für den Pferdesport und Reitsportfachmarkt Tom Büttner e. K.
- Siegwerk Druckfarben AG & Co KGaA
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Background to the Study

Editorial: Digitalisation of the World of Work

Over the years digital transformation of companies in Germany has made only slow progress. Two meta-studies (Grzymek & Wintermann 2020; Initiative D21 e. V. 2020) in the past two years have revealed that small and medium-sized enterprises (SMEs) in Germany now have a great deal of catching up to do when it comes to digital work. We should stress that in the following digitalisation does not refer to Principles of Industry 4.0; we are not concerned with issues of automation and process control in production, but rather with work that affects the vast majority of us personally each and every day. How can the use of digital tools serve to change the work culture and processes in companies and their business models? What prerequisites must be created within companies so that SMEs in Germany can better master the digital challenge in the future?

The global corona crisis of recent months has forcefully shown us how absolutely essential it is that companies – regardless of which branch they might be in – react flexibly to changing economic conditions. However, other worldwide developments such as globalisation, digitalisation of our everyday lives and demographic change also pose new challenges that companies must address.

Not merely since the onslaught of the corona pandemic and the challenges it poses for many companies has it held true that digital platforms and the Internet of Things with its intelligent and networked products are the driving forces behind the digital transformation of the economy and society. The corona crisis is now acting as a catalyst for the digital transformation of companies. Irrespective of the specific medium to long-term employment effects, about which there is still uncertainty, digital business and production models will fundamentally and permanently change the way work is organised in companies in the future. The high dynamics of change place new demands on flexible working and have a direct impact on the working conditions of people in the company. The way in which companies shape this digital transformation will determine what constitutes good work in

the digital age in terms of control of working times, participation, diversity of requirements etc.

Companies can become valuable experimental spaces for shaping the future digital working world. Company solutions, initially introduced, adapted and optimised on a trial basis, can later be taken up by social partners or legislators on an industry-wide or macroeconomic basis. However, the key observations gathered thus far already show that:

Technological developments in companies require a drastic change in the work culture – without this change, such development cannot succeed,

- A high degree of willingness to change and adapt must be established in companies,
- Traditional project management in digital workflows is being replaced by agile forms of working,
- The existing legal framework is no longer appropriate for a digital working environment, and
- Participation of employees is a central prerequisite for success.

Accordingly, with the present study we are pursuing two objectives: Firstly, to counter the anecdotal evidence, as presented in social or traditional media, in expert panels or personal exchanges, with a systematic record of experiences made in different companies and industry sectors. Secondly, to provide companies with a tool that helps them digitise work and rethink traditional business models and work processes.

Key Findings

The following list presents our key findings. The key findings serve as a comprehensive illustration of the essential results of our study, which in turn have been condensed from the systematic data analysis and their processing on a meta-level.

Key Finding 1

Management must lead by example

As with any major change project, the role, attitude and mindset of senior management is of central importance. This does not mean that the executive level should accomplish transformation on its own, but rather that it can set the right course through its attitude or provide the proper kind of framework for employees to try out, work out and test out for themselves. In contrast to other transformations, however, it is not so much a matter of “laying down the law” but rather of living out changes in digital work culture. It is not enough for the board of directors to introduce a new social intranet; they also have to set an example of how such an intranet can and should be used.

Key Finding 2

The leadership role is changing

More personal responsibility for employees, freedom of decision-making or even abolition of the entire hierarchy with all its managers? There is hardly a single company that has not grappled with such issues. Often fuelled by the desire to relieve the top level of management, and paired with the objective of making the whole company more innovative. The self-image prevalent among managers has shown us that there is great potential for action in this area in the future. In the long term, more personal responsibility and decision-making freedom and thus a readiness to take risks will not be possible without reshaping of the salary structure.

Key Finding 3

First the customer interface – but the internal structure must follow suit

Digitalisation takes place “both in front of and behind the curtain”. This line from one of our interviews immediately struck a note with us. It describes the effects of digital transformation on the company as a whole. Digital transformation first takes place on the level of technology (also externally, in other words in front of the curtain), and is almost complete in the companies surveyed. Even so, work on internal work processes and interfaces, i. e. work behind the curtain, is only just beginning. Digitalisation cannot be successful if technology is introduced only on the surface level without change to background processes and roles.

Key Finding 4**A willingness to try things out and transparent eye-to-eye communication are of the essence**

The most important recipe for success in implementation is “try it out, try it out, try it out”. If you want to adapt to new circumstances, you have to get active. This is a balancing act between, on the one hand, the uncertainty of moving into new territory, and on the other the courage needed to shut down fields and motivate employees to make a fresh start – whilst also being open to encountering resistance. Courage of this kind, however, should be rewarded. So far, backward-looking companies have tended to focus on career paths that minimise risks by choosing the safest option.

Key Finding 5**Spaces for innovation and learning must be created**

Why do companies embark on the digital journey? Because they spot new developments on the market and want to help shape them, because they sense opportunities for new business models and want – or have – to access new markets. The critical aptitude in all this is willingness to engage in life-long learning at all levels, and thus to keep the entire organisation open and innovative. How? We present the formats in the chapter Step 5: How does digital transformation continue?

The Business Challenge of Digital Transformation

In all the individual examples of successful digital transformation, the question arises as to which key success factors have helped companies make the leap into the digital age. But more than that: do such factors even exist?

CEWE has already successfully mastered the first major step towards digital transformation. At the time it was a question of survival: had the company remained true to its old business model, CEWE would probably no longer exist today. But as *DR REINER FAGETH*, CTO of CEWE says, digital transformation of the company is still not fully complete: “Today the company is facing the next big wave of digitalisation: the digitisation and flexibilisation of processes. Another major component of the second wave of digitalisation is the change in customer behaviour from digital to mobile which other companies must also now prepare for. This process is unthinkable without cultural change. In terms of the new digital transformation, the ‘old order’ must be left behind to release new energies for further development in the new order. This means that it’s crucial to create transparency with regard to data and decision-making, and to give employees opportunities to contribute their own ideas and help shape the future of the company.”

Blog: Zukunft der Arbeit
www.zukunftderarbeit.de

At the end of 2018 in a joint research project, the Bertelsmann Stiftung laid the conceptual foundation for illuminating the social challenge of digital transformation from the enterprise perspective. What challenges do companies face and what are the possible solutions? “To move away from anecdotal to more empirical evidence” is how *DR OLE WINTERMANN* of the Bertelsmann Stiftung described the approach of the research project that aimed to scrutinise the central success factors of digital transformation in companies.

Both the Bertelsmann Stiftung and the Fraunhofer Institute for Industrial Engineering IAO investigate the effects and consequences of digitisation on the future of work. The research (Hofmann et al. 2015) on the effects of the increasing flexibility of work, particularly in terms of location and working times, carried out jointly by Fraunhofer IAO and the Bertelsmann Stiftung in 2015, established a fruitful collaborative bond between the two institutions. For the present study, too, a starting point for further joint work was quickly found based on a common understanding of digitalisation: that digital transformation is far more than just technical digitisation and that it encompasses far-reaching upheavals and opportunities grounded in technology-based digitisation in the following areas:

- Work processes and organisational structures,
- Business models and economic and industry sector structures (platform economy),
- Distribution of work between human and machine (employment effects) and the resultant human-machine interface(s) (HMIs) and associated issues of needed skills and development concepts for employees,
- Together with the change management this requires which must be directed towards the capacity for permanent change and the appropriate corporate cultural environment.

Ultimately, digital transformation stands for the radical change of the way we do business, work and live.

A Holistic Perspective on Digital Transformation

Accordingly, digital transformation is never complete and cannot be accomplished in one fell swoop. Many small steps within the organisation are needed that start at one point and then multiply to encompass and change all areas and processes directly or indirectly affected. This also means that digital transformation is much more than the mere introduction of appropriate technology or the intelligent networking of machines in the production processes (Industry 4.0); it also involves a genuine, on-going and no-holds-barred discussion of the opportunities and threats posed by digitisation with all key decision-makers and important stakeholders, across all levels of the company and with all participants.

The ability to detect change signals in the environment and transfer them adaptively into the organisation will become increasingly important in the future for communication of the company's core business to the appropriate target audience, for conquest of new markets, development of new business models in the context of the emerging information economy (Boes 2019) and ultimately for maintenance of operational resilience and robustness – even in times of crisis. The global outbreak of the coronavirus in early 2020 has shown that rapid adaptation to new market and framework conditions is existentially important for companies. The data collection on which the results of our study are based on took place before the corona crisis so that the study does not take account of any developments that might have occurred in the course of the crisis.

“Research itself is also in a transformation mode” says *PROF. DR-ING. WILHELM BAUER*, managing director of the Fraunhofer Institute for Industrial Engineering IAO – “For example, even though we have long established mobile working at the institute, we were still not used to everybody working from home. Yet one thing is certain: corona is making us question working methods completely and critically. This requires insight, in other words research, it requires new concepts of work, and innovation, it requires new organisational models and rules.”

Digital Transformation in Practice

For the project team, economic practice comes on board through the perspectives offered by the Otto Group as cooperation partner of the present study. This retail and service group is one that opens up its ecosystem and networks with partners and like-minded people at eye level, exchanging ideas but also coming together with them to talk about mistakes.

Similar to CEWE, the Otto Group has also made the leap into the digital world of work: The transformation of the group of companies from a catalogue-based business model to one of the world's largest online retailers has been completed. This has also fundamentally changed both its processes and its work culture.

“For us, cultural change is one of the key strategic initiatives for remaining successful in an ever faster changing competitive environment. By strengthening the self-responsibility of our employees and by working together more closely across hierarchical and divisional boundaries, we can respond more quickly to the needs of our customers and develop our business models in an agile manner”. *ALEXANDER BIRKEN*, Chairman of the Executive Board of the Otto Group

State of Research and Formulation of Hypotheses

Theoretical foundation

Proceed in small steps or turn the whole organisation inside out? And: what has the way we work got to do with digitalisation? For the theoretical foundation of our study, we present selected thematically related studies that provide first indications when it comes, for instance, to assessing the level of digital maturity, describing a company's ability to innovate or dealing with changes from the past.

The digital maturity level

In terms of digitalisation, there are now a large number of different models and measuring instruments for the evaluation of maturity levels. The spectrum ranges from the evaluation of machine parks and the communicative capability of individual components to quick checks and empirical models from science such as the work of Berghaus and Back (2016). For example, in their model of the digital maturity of organisations, the gradual opening of companies in terms of the location and time-based flexibility of work is seen as an early stage of the digitalisation process, whereas the digitalisation strategy itself is only defined at a later stage and is far from being situated at the beginning of the process.

Operational innovation capability

If you want to conquer new territory, you must leave well-trodden paths. New forms of cooperation can be helpful here: they help us look at existing role models and ways of working with fresh eyes and thus help to establish a new way of organising work geared to a different objective.

As early as 2004, Sackmann referred to the innovation orientation in companies, describing it as the ability to “recognise relevant changes in the corporate environment at an early stage” and “to assess their possible effects on the company” (Sackmann 2004, p. 203). Success, he argues, depends on a company’s ability to adapt, i. e. on how flexibly and with what speed of change they react. In terms of success factors, a distinction is made between mechanistic and organic organisational designs which differ in terms of their flexibility or in the “degree of standardisation [...], the redefinition of tasks, knowledge and experience” (Sackmann 2004, p. 204) and the feeling of responsibility and identification.

Based on a recent study (Antons, Piening & Salge 2018) by the German Engineering Federation (VDMA), the business model innovation was defined as the dynamic capability that enables an organisation to adapt to changing environmental conditions while involving internal and external partners. The conclusion was that there was a “clear need for further improvement” in the “ability to rapidly develop new business models” (Antons, Piening & Salge 2018, p. 19).

Meyer (2015) also deals with the innovative capacity of companies in his dissertation. With regard to management structures, he cites the “rigid separation of departments”, “functional specialisation” and “bureaucratic” processes as negative influences on creativity, and he also underlines the tension in organisational design between the two structural poles (“business guidelines”) and “freedom for creativity” (Meyer 2015, p. 128).

Pisano (2019) characterises this innovation-friendly corporate culture with the following five features:

- Toleration of error
- Keenness to experiment
- Psychological security
- A strong spirit of cooperation
- No hierarchical structures

Understood this way, what might seem like a management culture straight from paradise has a flip side that is not as instantly appealing – error tolerance by all means but only on the very highest level. Mismanagement, poor quality work or any form of incompetence must not be confused with this – and must also be addressed! Likewise, experiments should also be given a clearly defined framework so that they may be terminated in a

disciplined manner. Open feedback must be endured and personal responsibility must be learned!

Kühl (2015, p. 81) analyses three dilemmas that arise when companies move into new “post-bureaucratic” structures as “pitfalls of flat hierarchies”. Firstly, every organisation that opens itself up to the outside world needs a vital boundary to the inside (identity dilemma) to ensure affiliation and inner commitment. Secondly, at the same time, the absence of hierarchies, i.e. the lack of legitimation by a certain position, leads to a shift of power (politicisation dilemma) and the power struggles associated with it. The third dilemma he cites is dealing with complexity where parallel structures, networking and overarching projects initially make cooperation more difficult. Such organisational ambidexterity is caught in the tension that arises between existing, effective structures and simultaneous exploration of the new.

Organisational ability to change

A study from 2016 on the organisational ability to change (Heckmann, Steger & Dowling 2016) shows that, in addition to the two factors of competitive intensity and technological turbulence, a company's past history also exerts an influence on current change experiences. Observation levels focus sharply on the role model behaviour of management during the process, but also on the ways in which (effective) communication was and is being achieved by the company. This results in a kind of collective understanding of transformation as well as a company-specific way of passing on information and forms of social support.

Level of digitalisation of companies in Germany

In partnership with the data, analysis and consulting service provider Kantar, the Bertelsmann Stiftung is conducting a representative survey (Grzymek & Wintermann 2020) of more than 2,000 employees in Germany. The aim of this study is to record the current status of company digitalisation from the employee perspective. Its findings show that employees – across all age groups – are more open to the digitalisation of the working world than the managers interviewed in previous studies.

The D21 Digital Index 2019/2020 (Initiative D21 e. V. 2020) provides further information on the degree of digitalisation of companies in Germany. This index shows the degree of digitalisation together with corresponding developments in German society. The data was drawn from regular computer-assisted personal interviews of up to 20,000 people. The Digital Index highlights that vital hardware infrastructure and access to mobile working is not sufficiently provided by employers. Consequently, a clear majority of respondents do not use remote working, working from home or other forms of mobile working in their current jobs.

Working hypotheses

Working hypotheses have been defined and set as a prelude to development of analytical instruments. The following assumptions, drawn both from the publications presented above and from the basic understanding of the project team, inform the survey:

1. Corporate culture is the key enabler of digital transformation

- a. The values and ideas in the company with regard to the use of technology are positive and have connotations of success.
- b. The nucleus of change is rooted in the actions of individuals.
- c. Previous experiences of change and their positive (negative) outcomes have a positive (negative) effect on the realisation of further transformation processes.

2. Resources available and approaches to solutions differ from company to company:

- a. Large companies are leading the way, as they have more resources at their disposal, thus accelerating the transformation process.
- b. Transformation in individual sectors has progressed at different rates. Without external pressure, there can be no change.

3. Digitalisation is changing the way companies are organised:

- a. Flexible work gives an entry to digitalisation and is seen as an early form of transformation.
- b. Digitalisation introduces new working methods and redesigns workflows, processes and products.

4. Traditional, mature organisational structures impede the journey to digitalisation through winding decision-making and information paths:

- a. Digitalisation and the introduction of new working methods often go hand-in-hand with the dismantling of hierarchies.
- b. Leadership through information advantage and as a prerequisite of hierarchy is less and less accepted by employees and lived out by management which means that management's claim to power is increasingly legitimised by identification and expertise.

These hypotheses are reflected in the fields of action as well as in the selection of companies for the case groups, and in the following are taken up on a case-by-case basis. In the Conclusion, they are taken up in a final analysis where they are partially confirmed.

Fields of Company Action

To systematically record the experience of companies in dealing with digitalisation, it was important to create a level of observation which – notwithstanding the individual nature of companies – allows for a uniform analysis.

To this end, the project team came together to identify fields of action in the companies which, as structuring elements, are the same across all the analysis instruments used. The company was considered as a socio-technical system where interaction and communication take place in its man-technology-organisation (MTO) structure, and which is subject to continuous and evermore rapid change. Interdependencies accumulate around its MTO interfaces and novel kinds of connections arise on the inside (for more on what such an interface might look like in the future, see Fraunhofer-Gesellschaft 2018). The company is increasingly transforming itself into a socio-digital system.

A primary field of action is thus the use of technology in the company as seen from the perspective of possible interaction. With this aspect, technology becomes an enabler that helps people work together digitally (including man-machine work), network, and learn from one another.

At the same time, technology is also a driver of digitalisation in companies. New technological developments help them open up new markets or simply ensure their survival in existing ones. The ability of companies to adapt, anticipate new digital business models, develop them, model them and ultimately fully establish them in the organisation is seen as a second field of action. The ability to innovate with regard to smart products, i.e. products based on information and communication technology, or new, data-controlled services, is also of interest here.

Closely interwoven with a new strategic orientation, the ways in which we work together will change. Flexibilisation of working hours in terms of the place and time of work is steadily gaining in importance as it gives not just employees but the company itself greater room for manoeuvre. Use of agile methods is also expected to increase the pace of implementation. Both these areas have been combined into the third field of action – work organisation.

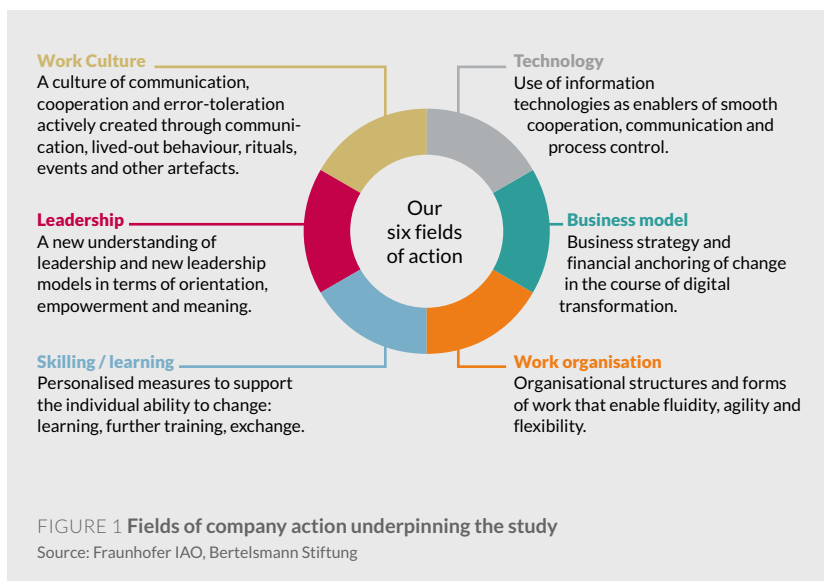
In turn, a new form of organising work also has an impact on the way companies are organised: how does the culture change when the parameters for organisation of work change? Or do we start with the work culture and

seek new forms of organisation that build on it? This is a further very exciting field of action on the road to digitalisation, albeit one not free of overlapping.

The penultimate field of action focuses on interaction within the organisation. What form of leadership is needed to work in a digital setting or to steer the organisation in this direction? Is there a need for management at all? If so, what role do they play?

The conclusion gives the human perspective in the MTO structure, when it comes down to supporting employees in the organisation on their way to transformation, promoting their skills and identifying and developing (new) forms of learning and skilling.

The definition of the fields of action, described in the form of six clusters (Figure 1), on the one hand offers a structural basis for the interviews with contact persons in the companies together with preliminary ideas for further measures, whilst, on the other, enabling comparison between the results thus identified.



As with any definition, and against the background of an organisation as a complex system, the chosen fields of action are certainly not free of overlap and in some points are mutually dependent. As an instrument of analysis, they therefore can be seen as a focus or pair of glasses from whose perspective the organisation as a whole can be viewed.

The detailed results for the six key fields of action are presented in the chapter Detailed Results for the Six Key Fields of Action in Digital Transformation.

Database and Selection of Criteria for Participating Companies

The criteria for inclusion of companies in the sample were defined in advance to enable collection of information in a targeted manner that allows for comparable, and thus also for generalising statements. The selection criteria for participating companies are as follows:

- A company history of at least ten years, with mature structures that need to be changed. This precludes start-up companies that can set up their structures on a greenfield site from the selection process.
- Private sector companies that face the challenge of wanting or having to digitalise their business model or have already taken this step. Public institutions are also undergoing change, but face different challenges in this respect and are not included in the selection.
- Economic sectors that are broadly based and thus acquainted with other industry sectors. In terms of the speed with which digital transformation is implemented in individual economic sectors, it is assumed that the pace of progress will vary.
- Company size of what is considered as a medium-sized enterprise. The Institut für Mittelstandsforschung Bonn (2016) ranks companies with fewer than 500 employees and an annual turnover of up to 50 million euros among the small and medium-sized enterprises (SMEs) in Germany. However, the exact number of employees has been deliberately left open here, as even companies with some international activities can still be regarded as medium-sized in terms of their structures (short decision-making processes, tending to be family-run etc.). In its spectrum, the sample also includes small owner-managed companies as well as large corporations (> 10,000 employees) from all over Germany.

In view of the time needed for implementation and the gathering of a sufficiently copious amount of data, a case number of 15 participating companies ($n = 15$) has been selected on which basis statements are to be evaluated.

The results presented in this study should always be read with the understanding that the statements of the 15 participating companies form its basis and represent the employers' side. Companies are distributed across different sectors, with different turnover and employee numbers across the whole of Germany. Participating companies were selected on the basis of a positive selection, as they have already dealt with the issue and can show their first successful outcomes.

A Mix of Methods from Quantitative and Qualitative Data Collection

With a mix of methods consisting of qualitative, in-depth interviews and quantitative data collection in the form of an assessment tool, the first theory-testing tendencies can be developed.

For quantitative analysis, the Bertelsmann Stiftung developed the Digital Pathguide assessment tool. This is a tool with which companies can determine and map the status quo of their own digital transformation with the aid of an online questionnaire, thus supporting the further course of the transformation process. Obtained by comparing employers' and employees' questionnaires, the results can then be used to derive the next steps for further stages of the companies' digital progress.

For the research project, only responses from the employer perspective are given from the 15 participating companies. Employee data were not included in the research agenda and may be obtained at a later stage.

Collected in the written form for all companies via the Digital Pathguide, the uniform database forms the basis for the in-depth interviews. These quantitative data were a useful basis for preparation and consolidation of the qualitative interviews. An interview guide was developed for the company interviews which takes account of the six fields of action in its structure and also probes still deeper with its supplementary questions.

For evaluation and processing of the results, we have combined, condensed and extracted company data from the assessment tool and in-depth interviews. This blend of quantitative written results and qualitative in-depth interviews makes it possible to draw a fairly clear picture of where topics are similar from company to company and where they are highly individual and differentiated.

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Participating Companies

Figure 2 visualises the age, period of employment with the company, gender and functions of the persons interviewed. Figure 3 shows the origins of the companies participating in this study, and also provides more detailed information on company locations, sector affiliation and number of employees.

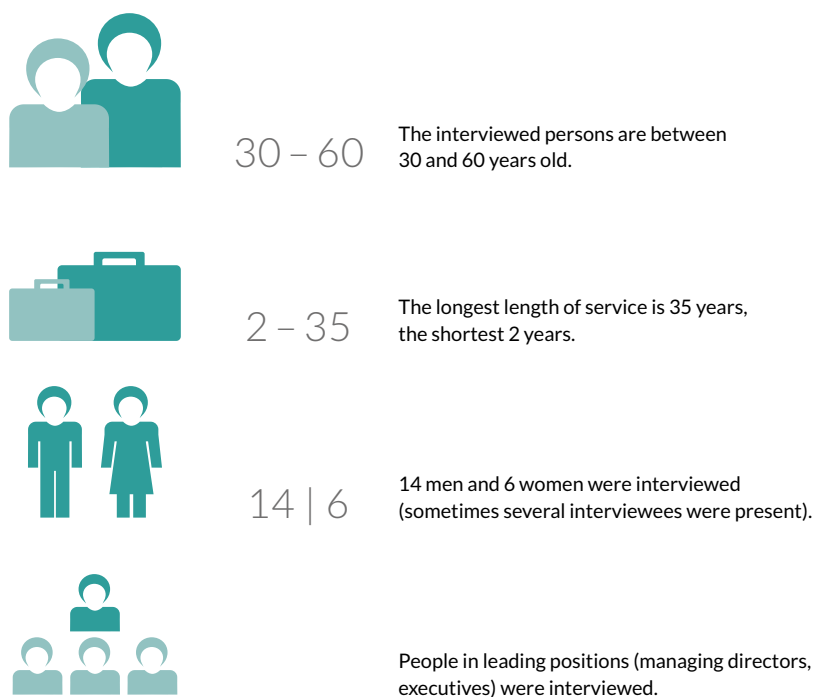


FIGURE 2 Age, seniority, gender, and functions of persons interviewed

Source: Fraunhofer IAO, Bertelsmann Stiftung



FIGURE 3 Locations of participating companies

Source: Fraunhofer IAO, Bertelsmann Stiftung

Objective of the Study

Since the corona pandemic at the latest, the world of work in companies has been in the thick of digital transformation with serious consequences for the way we do business, work and live. Companies are confronted with a broad range of questions and challenges on how to:

- develop new digital business models,
- develop new markets, and
- become faster and more efficient by using digital tools.

Regardless of what artificial intelligence, bits & bytes, tools, processes and apps we might have, this is an endeavour that cannot be achieved without the active involvement of the whole cast of participating actors in the company. The results of the present study are intended to provide answers for and across all levels as to how the process of digital transformation can be successfully shaped, which kind of thrust or impetus typically starts it, and which kind of success factors can be formulated for this, factors which can be transferred to other companies independently of the respective business model.

To find out how digital transformation can succeed in companies, we therefore focus on the process of implementation. Our assumption that companies have to deal with a wide range of different parameters and are confronted with individual challenges was more than confirmed during the research phase. It is precisely these different approaches with their respective paces, and degrees of implementation and effort that make the results so exciting in terms of learning from others and developing one's own particular pathway to transformation – or even critically questioning it. How do the others actually do it? Does Silicon Valley provide the answer or is “Made in Germany” preferable?

We did not go to Silicon Valley because we felt that circumstances of production and labour can best be compared and transferred within one specific country. This is why we surveyed companies of different sizes and business activities across the whole of Germany. We wanted to know which transformation skills and resources people in the surveyed companies are using to shape digital transformation at the individual and organisational level.

Clearly, the basic principles of organisational change also apply to this process in which it is important to explain the urgency of measures or changes, to win supporters for the project and to involve employees in it. But how? And by whom? And what effects can be observed within the company?

Our key research question is therefore: How can the process of digital transformation in the company be successfully shaped?

The targeted implementation of a change in the course of digitalisation is basically no different from other change processes and their effects (Kotter 2011), for example, when it comes to dealing with resistance or anxieties on the part of the workforce. Possible conclusions can be drawn from this in terms of the definition of successful digital transformation, i.e. the characteristics of a good process which are decisive for the research project:

- participatory: involvement of stakeholders
- communication-intensive: enabling explanatory, motivating, trend-setting work
- ethically aware: timely and transparent discussion of the medium to long-term consequences
- responsive: with largely iterative principles
- reflected: readiness of those responsible to initiate revolutionary changes and cast off intellectual taboos and blinkered vision
- equal rights: consideration of the interests of various stakeholders and applicable success criteria (business management related to good work and the contribution of the company to society as a whole)

Executive Summary of Study Results

We imagine a company's path to digital maturity as an iterative process. What is valid today may be obsolete tomorrow – and requires constant adaptation to given conditions. The good news is that this can be put into practice. Once you've successfully instigated change, the next time round you can build on the know-how you have acquired, and – hopefully – reach your goal faster.

Figure 4 sets out the individual core components of the corporate road to digital transformation in a coherent cycle and describes the respective associated implementation issues.

In the following chapter *On the Road to Digital Transformation* we go into greater depth, become more action-oriented and show what experiences the companies surveyed have made.

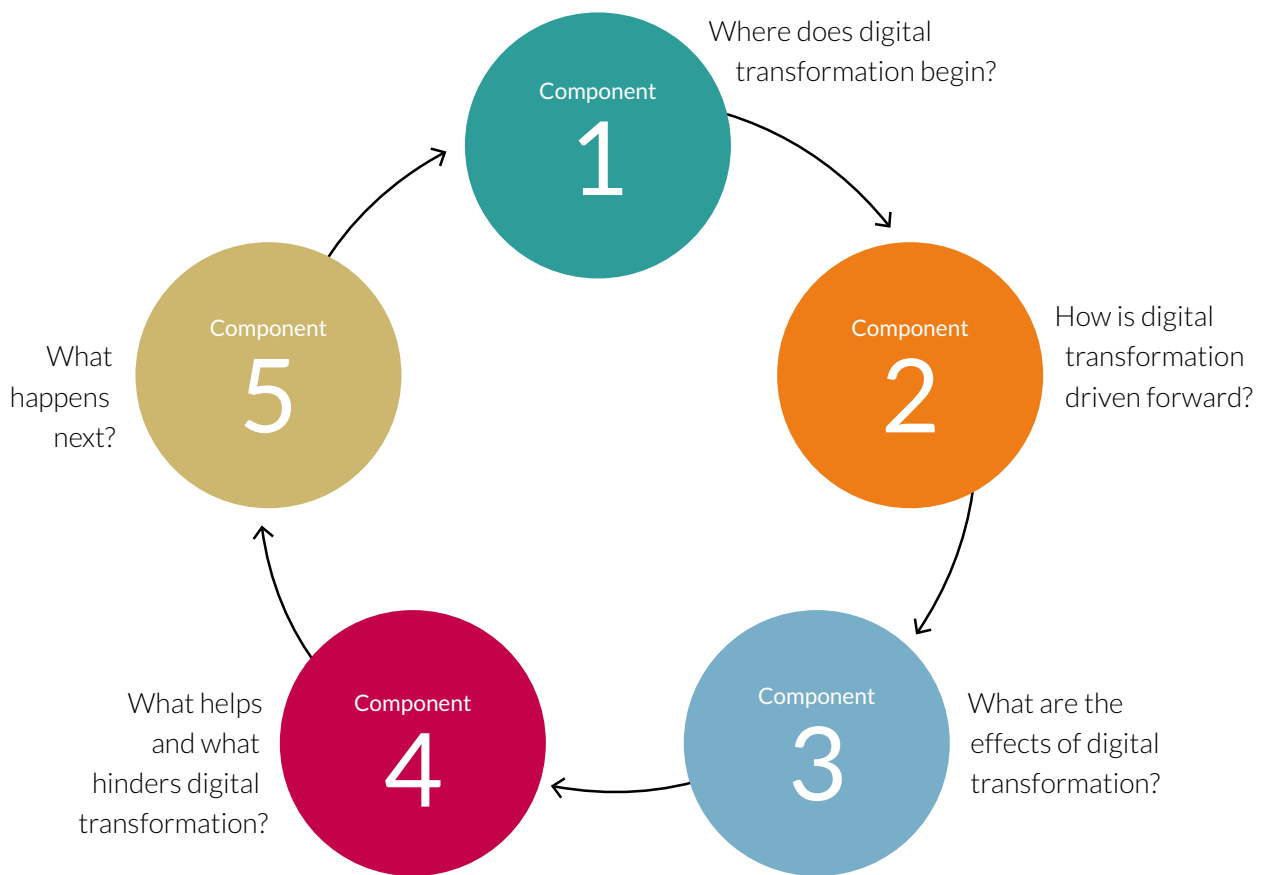


FIGURE 4 Core components of digital transformation

Source: Fraunhofer IAO, Bertelsmann Stiftung

On the Road to Digital Transformation

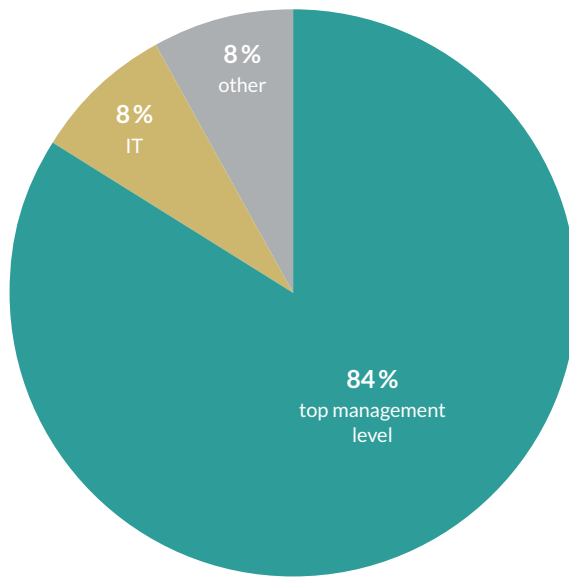
The 5 core components of the digital transformation process in companies

Step 1: Where does digital transformation begin?

The answer to this question requires a primary distinction to be made between the ‘who’ and the ‘what’ of digital transformation or the driver of digital transformation, in other words the individual or group of people who gives or give the impetus to think about new business models and forms of cooperation, and the specific cause that triggers change in the company.

The role of management

A closer look at the ‘who’ relatively quickly reveals that the driver of digitalisation is to be found neither in information technology (IT), nor in human resources (HR), nor communication departments. Rather, it is the top management level – whether this be the board of directors, the managing directors or company owners themselves – who appear as the original font of digitalisation. The answers to “IT” and “Other” in Figure 5 come from two companies already so well positioned digitally that their digital transformation is taken for granted as part of their corporate culture. Here the impulses come in the one instance from all employees and in the other, as it happens, from IT which has its own division with several hundred employees.



“Who in your company has set the decisive impulse for digital transformation?” (n = 13)

FIGURE 5 Drivers of digital transformation in enterprises

Source: Fraunhofer IAO, Bertelsmann Stiftung

A number of larger companies are creating a new executive position on the board of directors, the Chief Digital Officer (CDO), who is responsible for planning, managing and implementing digital transformation. Thus digitalisation is also anchored at the top management level, with implementation equally affecting all areas of the company. Creation of a dedicated management position in the form of the CDO brings both advantages and potential disadvantages. Advantages, because the issue of digitalisation is thus located at top management level and so becomes a key management issue. Disadvantages because simultaneously there is the risk that other managers, especially the CEO, will no longer see digitalisation as a task and responsibility that falls within their own area of jurisdiction.

This also confirms thesis 1b formulated at the beginning (“The nucleus of change is rooted in the actions of individuals”, cf. chapter on Working Hypotheses). The starting signal stands and falls with the attitude of management. If management does not recognise the importance of digital business transformation, the entire business can be put in a precarious position. Even if employees have put forward suggestions and impulses for digital transformation in the company, impetus from the top management level is still needed to get the company transformation machine moving. It is management that sets the necessary course and defines the (action) framework. Triggers to action often lie in the managers’ personal sphere, whether through their own children and grandchildren who, as digital natives, exemplify how to deal with digital media, or through reading of (specialist) literature, and familiarity with new values and concepts, or in the inspirational nature of science fiction films.

“I’ve read a book ...”

“I’ve seen a film ...”

IT departments are not the main drivers of digital transformation

When it comes to the use of new technologies and information systems, one department in particular comes to mind: IT. Its role in digitalisation varies greatly from one company to another. But they all have one thing in common: the IT department is not the main driver of digital transformation.

Even so, the IT department is still an important part of digital transformation, both in its role as an operative implementer and as a strategic sparring partner for digitalisation. In some companies, the tasks are divided into two different IT departments, as per the two-speed IT model, which deal with different focal points but work in close cooperation with each other:

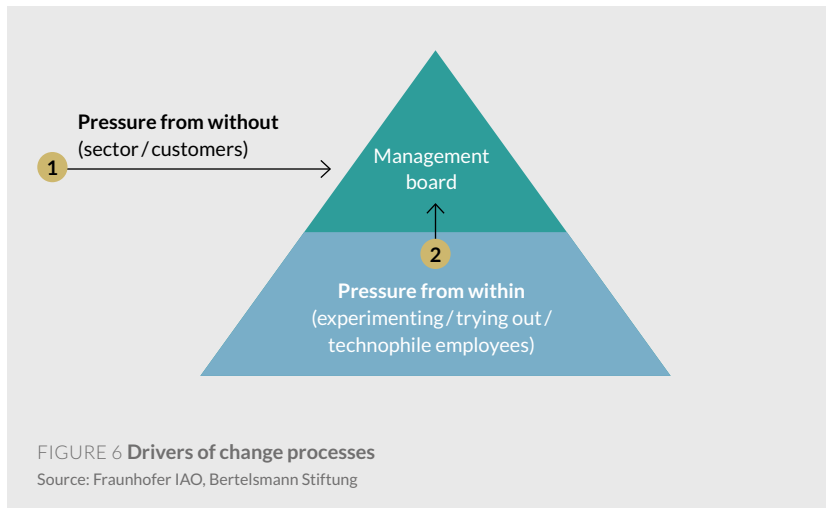
- **IT as the operative implementer of digitalisation:** The task of operative IT is to create, maintain and optimise the required technical infrastructure and to ensure that internal and customer-related processes run smoothly and in line with data protection regulations. Thus, operative IT creates the technical prerequisites for successful digital transformation.
- **IT as a strategic sparring partner for digitalisation:** The task of strategic IT is to introduce and promote IT innovations in the company, to help shape the digitalisation strategy and to accelerate digital change. One important part of this is strategic development of constantly adapted and optimised technologies that allow for an optimal customer experience.

Furthermore, the IT department can also serve as a blueprint and source of inspiration for the introduction of new working methods throughout the company: flexible and agile working methods often start here.

CASE IN POINT

IT as a pioneer for new working methods at comdirect bank

One example of new ways of working is provided by comdirect bank, where the introduction of agile working methods was first initiated by the IT department. While the IT department, as the heart of the business, was already working with agile methods, comdirect realised at some point that IT, in the interests of efficient operational collaboration and optimal customer service, could no longer work on a stand-alone basis. Following the example of their IT colleagues, other teams have also started to work in an agile and cross-functional manner at all levels. The new working methods have thus spread and established themselves throughout the company.



Drivers for change

As Figure 6 shows, drivers for change have been identified from two different directions:

1 The market environment (thesis 2b “Transformation in individual sectors has progressed at different rates. Without external pressure there can be no change”; cf. chapter on Working Hypotheses) plays a key role in this context. If changes occur here, for example, due to:

- regulatory or legislative changes,
- new technologies relating to products or processes using AI, robots or data analysis capabilities, or
- fast changing customer needs

bringing stagnation with them, or an imminent drop in demand or even an attack on the entire business model, then the switch is quickly set for change for economic reasons, as one interviewee confirmed: “It’s the realisation that without such changes the company would no longer exist today and that this danger will also haunt the future.”

2 But there can also be a gentle revolution from within the company with no need for outside pressure if employees are left to their own devices. Thesis 1a “The values and ideas in the company with regard to the use of technology have positive and successful connotations”; (cf. chapter on the Business Challenge of Digital Transformation, Working Hypotheses). In other words, the techies are given the time, space and budget to try out their new technological toys. Two of the companies surveyed in the case group are considered pioneers of Industry 4.0 (networking production machines) and for both of them this approach is a kind of matter of course because, as the interviewees said, “trying out something new was nothing out of the ordinary” and just a matter of “simply putting a cable across the

yard and getting the signal technology going". Admittedly, the road to success was beset by resistance, but even so, employees were able to make a contribution and make their voices heard.

Such enthusiasm for new technologies can also be exemplified in the highest echelons, especially in smaller companies, by management itself and individual employees. Trying things out is not so much an issue for the whole of corporate culture as a matter of personal freedom for technophile employees. Technophilia should not be seen as the saviour of innovation, it is much more about playful ways of trying things out and about being intrigued by the possibilities offered by technology.

This is where that zest for fiddling around with machines, seen as quintessentially German, comes into its own, an essential strength from the past. It is a virtue when there is ample time for hit or miss experiments with no economic pressure forcing results.

Two companies from other sectors founded after the turn of the millennium describe their attitude as follows: "No primary impulse was needed because digital change is wired into our DNA". A large number of their employees boast IT skills and this is mirrored in the overall corporate culture. But even in such a context, it is only a handful of employees that are actively engaged in shaping change.

Step 2: How will digital transformation be driven forward?

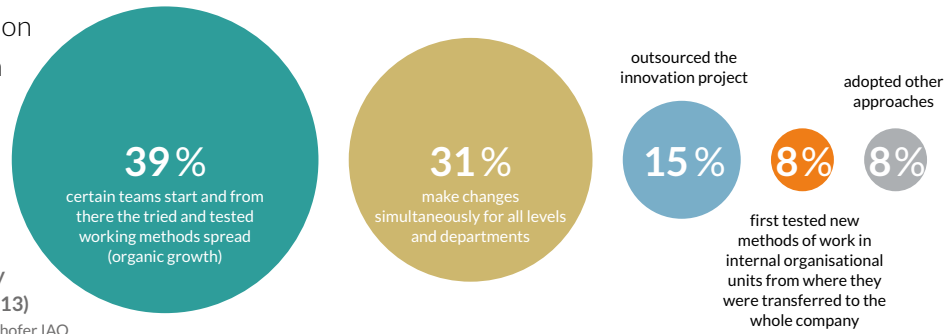
Creating incubators

In shaping new forms of work, the effect of the size of the company comes into play. In smaller organisations (with up to 100 employees) it is still (in the main) possible to set out with a defined starting date across all levels and departments, and change the way of working virtually overnight. Larger companies, on the other hand, need much more time to reach all employees and realign all interfaces in the company. In terms of implementation, most of the larger companies surveyed proceed rather cautiously and rely on smaller units that try out new ways of working and spread and multiply from there (Figure 7).

“How is digitalisation being driven forward in your company?”

FIGURE 7
Starting points
for company
digitalisation (n = 13)

Source: Fraunhofer IAO,
Bertelsmann Stiftung



Room for innovation – inside or outside the organisation

How do I create spaces of creativity for the employees in order to – hopefully – establish innovative products, processes and projects that help the company forge ahead in the competitive marketplace?

Employee participation and collaborative development of solutions are clearly on the rise. This is a critical aspect for almost all companies, as Figure 8 shows.

Around two thirds of those surveyed said that such space had been created and structural changes made in their companies. A large number of new organisational units have been set up, some of which have been found

“How is your company working out which changes are necessary in products or services, manufacturing processes, work flows or the business model as a whole?”

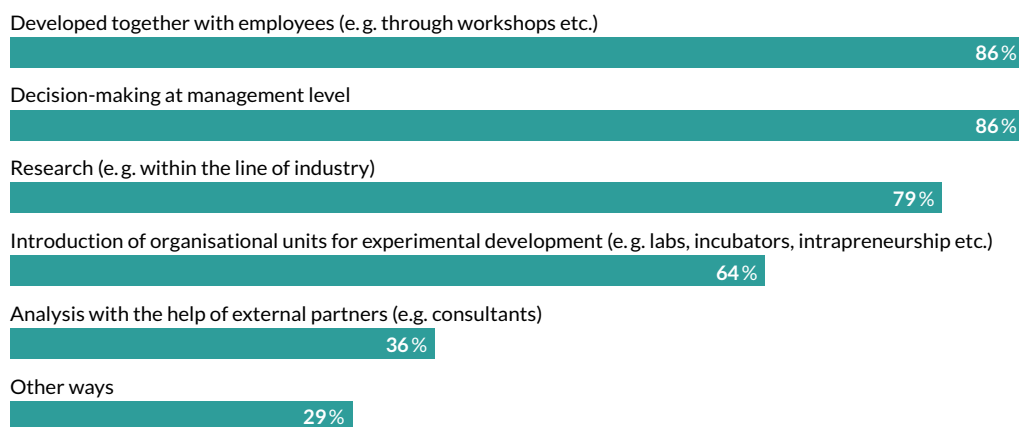


FIGURE 8 Procedure for identifying the need for change in the company (multiple answers possible, n = 14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

wanting and either completely reengineered or changed and further adapted. The list below describes the most exciting approaches.

Staff Units: Targeted development of skills in the form of a staff unit for all digitalisation projects. People in the staff unit usually work with more autonomy, more personal responsibility and other methods than the permanent staff. Creative people and freethinkers are gathered here, similar to an Innovation Lab, only embedded in the organisation. They perform a balancing act between driving forward innovation whilst also cultivating a feeling for internal sensitivities, a blend of creating the novel and adaptation to the company.

Innovation Lab: The idea of a digital lab is to establish a space for free-ranging creativity. Such a model is specifically uncoupled from the business unit in order to promote the maximum degree of innovation and creativity, and is currently favoured in the trend-setting Berlin hub. Maintaining a distance between Lab and business unit is a sensible move as, after all, independent free work is part of the Lab's concept. Even so, without common interfaces, innovations remain in the Lab and tend to be rejected by companies. Under such conditions there is (almost) no transfer of knowledge and methods into the company, and cultural adaptation problems can be observed when Lab employees return to their workplace. Yet physical proximity to the company, e.g. directly on company premises as a separate unit or more remotely but "easily accessible by bus", allows for an exchange and transfer of experience to take place in both directions.

Grassroots Initiatives rely on collaboration to drive forward company innovation through leverage of dedicated employees. Such initiatives are characterised by a mainly flat hierarchy. Since the focus is very much on interest in the issue and creative exchange, hierarchies are often superfluous. Organisations use their own grassroots and initiate the movement from two directions:

- **Top-down:** Higher positions explicitly provide employees with resources to deal with problems identified in the work process.
- **Bottom-up:** Employees organise themselves on their own initiative.



In the companies surveyed start-ups are used as incubators in a variety of ways:

- **Temporary Cooperation:** Targeted scouting of start-ups for a specific problem, on which both companies then work together on a time or project basis. After completion they both go their separate ways again.
- **Start-up Garage:** Start-ups can propose their innovation ideas and are given financial support and additional resources for a set period of time to realise them.
- **Acquisition of Start-ups:** One way of opening up new markets and learning new ways of working is through acquisition of start-ups. As with the staff unit, there is a conflict here between delimitation and distance and/or gradually absorption in the purchasing company in which the salient features of the start-up are slowly lost.
- **Entrepreneurship in the Company / Spin-offs:** New ideas are born in the company, and receive start-up assistance in the form of resources and investment before the people who first had the idea can establish themselves on the market as an independent company. Such spin-offs are often effected with a view to attaining greater organisational flexibility as the spin-off creates a new unit in full control of its own development. This model is less suitable for knowledge transfer, however, as the challenges facing the two companies are different in nature. The aim here is much more to broaden the business base in the long term.
- **Entrepreneur in Residence (EiR):** People who want to launch their own start-up or business or who already run a small, up-and-coming business are temporarily integrated by a company as Entrepreneurs in Residence. Along with a plan for the set-up, the company provides the EiR with the resources they need to demonstrate their entrepreneurial spirit on a project-related basis and gain essential experience. The advantages for the company are that it can benefit from the talents of the EiR, develop a resource for implementation and subsequently invest in this start-up or business.

As with all structural changes, management itself must want them, be deeply convinced of them, endorse them and – ideally – live them out or participate in them. This type of commitment cannot be prescribed from the top-down because it has to do with a change in behaviour which first must be initiated from within the organisation and then needs a critical mass of approval if it is to change the business.

Once the nuclei for this development have been created, they work within the company at different speeds, with different methods and possibly also with opposing objectives, e.g. cooperative work versus retention of power. For more on ambiguity and friction between different working methods, see the chapter on Work Organisation.

Diversity of change in images

Another form of inspiration and knowledge transfer is described in Figure 9 to the right of the very free-ranging interview question “If your firm were an animal, what would it be and how would you describe it in terms of its ability to change in relation to the digitalised environment?”.

Step 3:

What are the effects of digital transformation?

Whether in terms of products, processes or the form of organisation, digital transformation has a considerable impact on the entire company.

Digitalisation in front of and behind the curtain

In a first wave of digitalisation, transformation usually takes place at the level of technology introduction and conversion of products and services from analogue to digital. We refer to this as digitalisation in front of the curtain. For one company this might be a question of survival, for another it is simply a matter of DNA. Either way, the fact is that the majority of the companies surveyed have already successfully mastered this first major wave of digital transformation:

“What if your firm were an animal? Which one would it be, and how would you describe it in terms of its ability to change in the digitalised environment?”

Chameleon

“Constant adaptation to customer needs. This is my understanding of service - listening to customers, understanding what they need, the ability to pick up information from conversations and be a good listener.”



Chameleon

“highly adaptable, but this refers to the current situation, even if it doesn't mean that we meet all customer wishes. Before, it used to be something rather slow and rigid, too involved with navel gazing to become a chameleon.”

Bear

“is strong, seems slow and sedate but can move very quickly. Or a salmon: is vulnerable, but a strong fish that can swim against the current, and change its colour.”



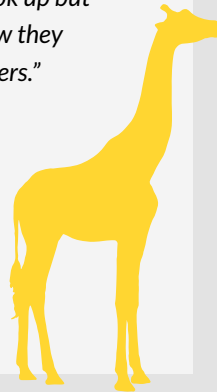
Butterfly

“that transforms itself through continuous metamorphosis.”



Dinosaur or giraffe

“loving to look up but further below they are like tankers.”



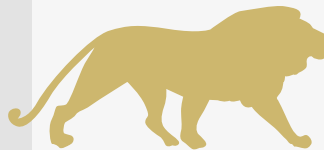
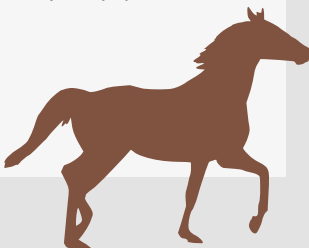
Ant

“can do things in communities and build a common house, has a clear assignment of tasks and can hold its own in the environment.”



Horse

“can be fast and proud, but also has to pull the carriage, which slows it down. Sometimes it can shake free of its harness and be pretty quick.”



Lion

“uses the time for strategic innovation with confidence and from a strong position.”

Baboon

“a cool monkey with a cap and magic wand who is a mediator who can also perform marvels.”

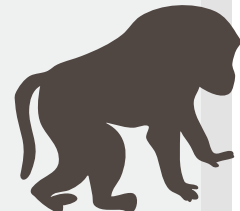
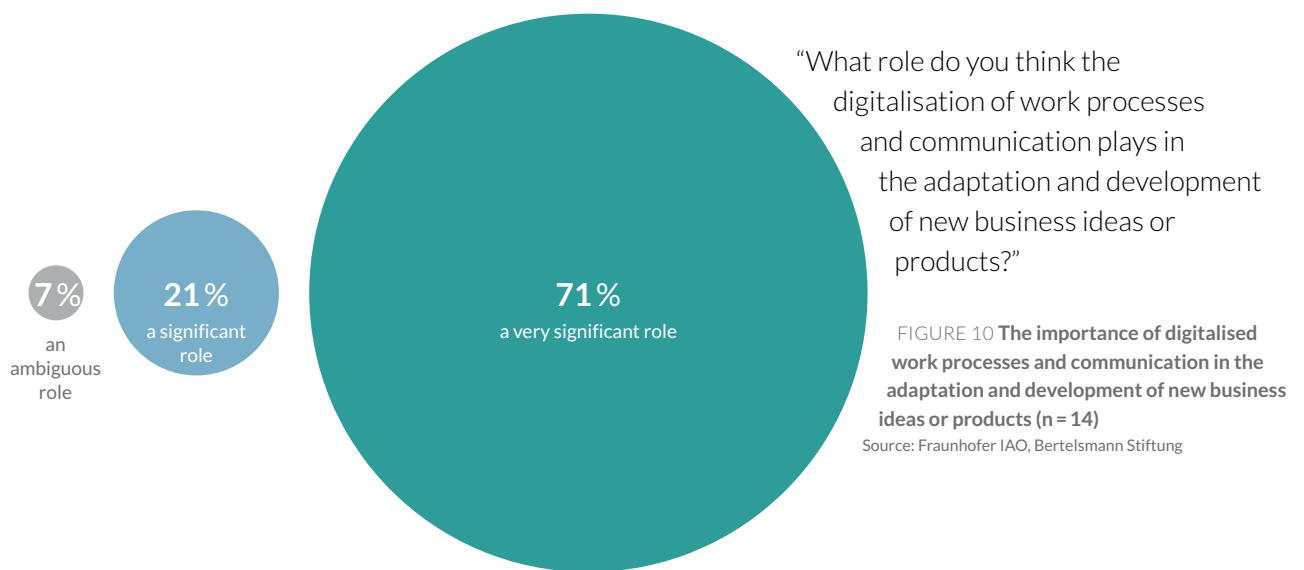


FIGURE 9 Ability to change expressed in pictures

Source: Fraunhofer IAO, Bertelsmann Stiftung

- Employees have been given the necessary hardware and software
- Collaboration and communication tools facilitate collaboration and promote internal exchange,
- Customers enjoy web-commerce platforms and direct digital access to product information and services,
- Some companies have introduced new products in the course of digitalisation and may have changed their production routes.

Yet even so digital transformation is still far from complete.



Now the second wave of transformation begins, digitalisation behind the curtain. This has primarily to do with flexibilisation and optimisation of internal work processes and interfaces (cf. Figure 10), and includes centralisation of work processes and information, use of artificial intelligence and replacement of classic waterfall project management with iterative, agile working methods. It is generally driven by the desire to be better and faster in satisfying customer needs.

While the majority of companies surveyed have already completed the first wave of digitalisation, digitalisation behind the curtain is now in the process of being engineered. This shows itself to be a profoundly complex process, one that will bring about changes in working methods and management roles.

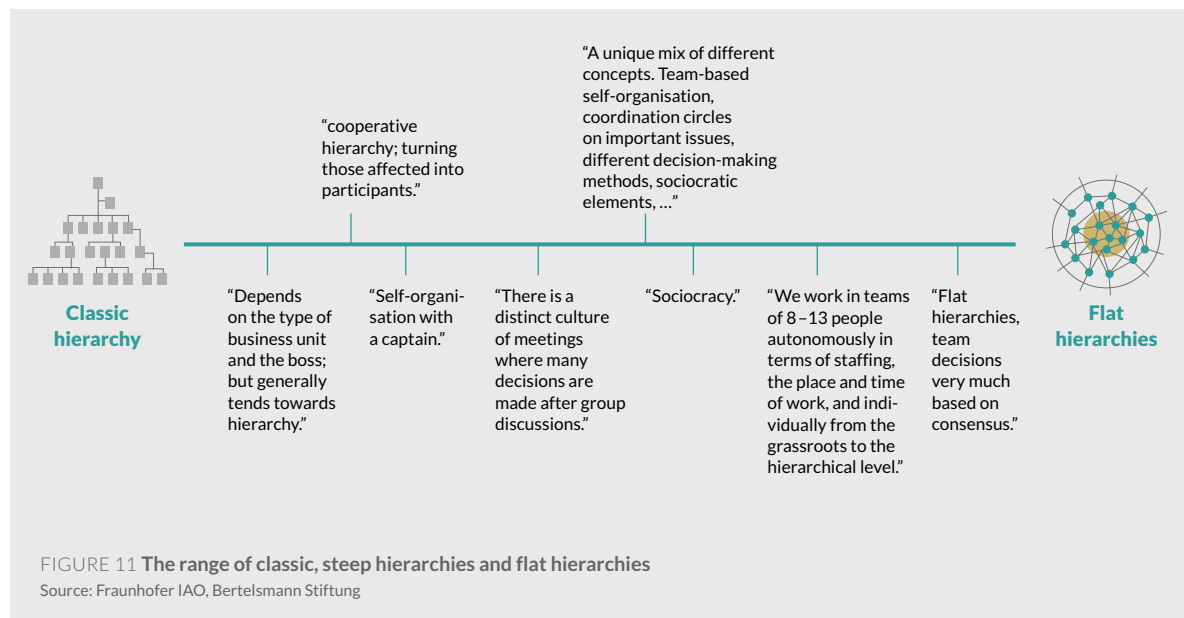
Decision-making and organisational forms in the age of digitalisation

The second wave of digitalisation is inseparable from organisational and cultural change within the company.

Successful flexibilisation and optimisation of work flows requires a new dimension of transparency in the company, one created by adapting decision-making processes and organisational structures. Centralised control of data sources and work processes should ensure that operationally relevant information and decisions become more transparent for all actors involved.

A tendency towards decentralisation of responsibility and decision-making powers can be perceived as a counterweight to the centralisation of data. Yet these two developments are not necessarily contradictory. Far from it – greater transparency through centralised preparation and communication of data and information enables broader participation and co-determination by employees whilst also ensuring that all pull together at the end of the day.

Such interplay can be seen in the various forms of decision-making and organisation used by the companies surveyed. The continuum between the two extreme forms of traditional, steep hierarchy and new, flatter forms of organisational structure displays a number of different gradations (Figure 11).



Alongside the cooperative hierarchy (which turns its people into participants) and the flat hierarchy (making decisions based on team consensus), there are also multiple mixed forms of organisation and decision-making. Some make selective use of the sociocratic and holocratic elements of management, while others work from grassroots democracy to classic hierarchical structures, depending on the team. The main thing is that the form of organisation is appropriate for the respective company, department and team of employees.

Another point that all companies have in common is that existing forms of organisation are not an unchangeable construct. All the companies surveyed deal with the question of how they can shape and implement modern forms of organisation and management that are compatible with digital transformation.

Abolishing middle management

“We need more leadership than before, but fewer leaders,” says *SVEN O. RIMMELSPACHER*, managing partner of Pickert & Partner.

In the small, IT-related companies (up to around 100 employees) of our case group, digitalisation usually leads to a reduction in middle management.

Departments are being shut down and replaced by cross-functional teams. Each team must function from end-to-end. Just how the team works, however, which working methods, tools and with which distribution of roles, is something team members are allowed to decide for themselves – based on the needs of the project, the customers and employees themselves.

This calls for a high degree of self-organisation both of the individual and the team. And self-organisation can only take place if decisions can and may be made everywhere. From machines in production to management, everyone must be willing and able to make decisions in their areas of work based on the available information and with the appropriate methods.

Creation of new roles – and redefinition of old ones

Traditional management tasks are divided up among team members in cross-functional teams in the form of roles. In this context a distinction is made between disciplinary, professional and personal leadership. Disciplinary leadership is usually omitted in self-organised teams: it is most needed for legal and juridical issues where it is less seen as an instance of steering and control and more as a service to the employees.

Professional and personal leadership, on the other hand, is always assumed by someone in the team, only on a rotating basis detached from traditional hierarchical levels.

The role of project manager is a prime example of this. The project manager typically takes on the role of technical leadership. Who becomes a project leader depends on that person's skills and abilities in a particular professional area. Accordingly, the role of project manager can be assigned to different people at the start depending on the type and content of the project.

The notion of "career" is defined in line with this. Making a career means having the opportunity to develop continuously and to take on tasks that are fulfilling and fun, even if these tasks differ from a person's original professional and academic background. Even so, such fluid development of the individual within an organisation is far from being a reality. It is still a matter of individual cases and follows on from the debate on new forms of remuneration and pay (New Pay) for employees that offer more than purely financial rewards. This is an exciting challenge for the HR department. Moreover, careers are no longer made in competition with one another, but through good cooperation in a team.

CASE IN POINT

Personal leadership through mentoring at Pickert & Partner

Pickert & Partner no longer has traditional type managers. To avoid losing one important facet of management work – the long-term development of employees – each employee has now been assigned a mentor with whom they can regularly discuss a wide variety of topics, such as potential problems and needs as well as their own personal and professional development. This mentoring concept is based on absolute confidentiality and reciprocity, but also on commitment: everyone in the company must have a mentor, including the managing director.

Cooperation in matrix organisations

In larger companies, the change in understanding of leadership seems to be taking place more slowly.

Classic hierarchies often coexist with new, cross-functional teams that work over and beyond traditional hierarchical levels. This results in a matrix organisation where one or more cross-departmental staff departments exist alongside the original line organisation. Interaction between the line organisation and staff departments is via a variety of interfaces at different hierarchical levels.

In many cases the understanding of leadership has changed in recent years in the sense of flatter hierarchies and increased participation. This is in part highly dependent on the particular department and manager, and is (still) not reflected in a company's organisation chart which even today is still classically hierarchical.

Step 4: What helps and what hinders digital transformation?

Like all processes of change in business, digital transformation needs fertile soil where it can flourish. What does a suitable environment look like for the development and promotion of innovation and thus also for successful digital transformation?

It takes ... a pronounced willingness to try things out and a readiness to learn from mistakes and experience

The results of our study show that a pronounced willingness to experiment, combined with a structured and learning-oriented approach to errors, is an indispensable prerequisite for the successful realisation of digital transformation.

In particular, trying things out in as many and varied places as possible leads to a sense of achievement within the organisation and among employees, even if some measures fail. Especially in times of change, coming together to celebrate and report on successes is extremely important for building and maintaining a positive work ethic.

Each company has its own approaches, methods and formats for dealing with errors. For more on this see the chapter on Work Culture.

However, people learn not just from their mistakes, but also from their previous experiences of change. Positive experiences in dealing with change also have positive effects on the implementation of further change processes, as they create a feeling of pride and confidence among employees ("we can do it"). At the same time, multipliers, communication channels and methods such as lessons learned (see the Toolbox chapter) are also present in the company and may be engaged with again in the future.

It needs ... A GREAT DEAL of communication

Communicative support of the transformation process is a vital asset in continuously driving digitalisation and bringing it into the team. Larger companies often have a central point of contact, e.g. in the form of a contact person in the PR department, who serves to ensure that the issue is aired throughout the whole organisation.

In terms of communication of the transformation process within the company, “the medium is the message” is very much the principle. Not only should the technical medium be tailored to the content (no paper communication when it comes to digitalisation), but also the way of communication should change in the context of digital transformation: much less push-communication, much more dialogue, much less frontal communication, much more joint exchange.

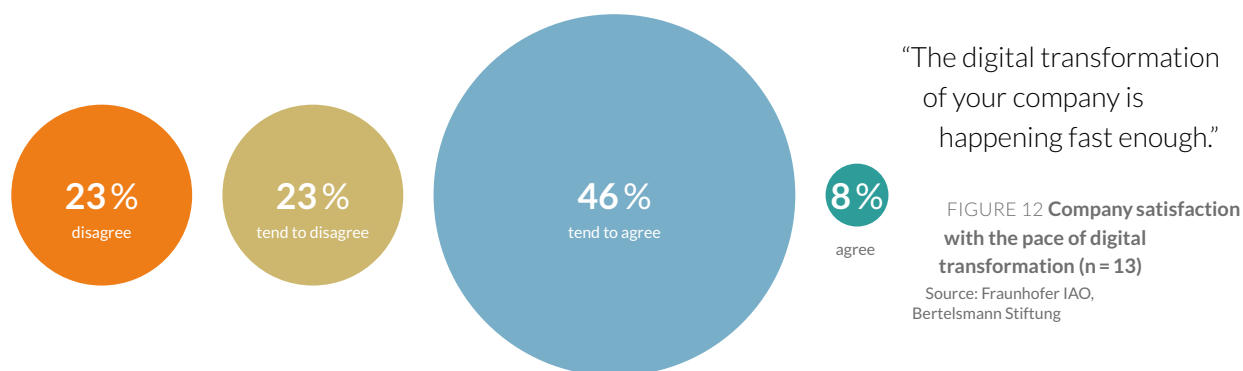
Employees at Xella International are involved in specific issues via a range of multi-channel formats. Communication is considered an essential asset in this context for continuously advancing the issue and establishing the new world of ideas within the team. It is also embodied by the dedicated contact person in the PR department who supports measures in this capacity. Employees, customers and business partners are kept continuously up-to-date on the latest news and progress made, and supplementary formats have been set up for this purpose, including a CDO newsletter and internal and external webinars.

Yet it is not only communication throughout the company, but also communication within the team, and between employees and managers that is vital. Their job is to raise employee awareness of the added value the transformation process brings with it, and of why it makes sense to introduce one or another innovation.

It needs ... resources and proper handling of complexity and speed

Even so, companies on the road to digital transformation still have many hurdles to jump.

In some cases, financial and human resources for implementing digitalisation are lacking. In times of economic difficulty, innovation project budgets in particular feel the pinch of austerity programmes. As such projects need a longer time span, to some extent they stand in a certain competition with day-to-day business. For larger companies one possible answer to this problem is to spin off innovation issues into an organisational unit with its own separate budget that operates independently of daily business.



Furthermore, like other change processes digital change requires a great deal of cultural and persuasion work to take employees along, encourage them to rethink and reduce anxiety. The switchover to new products and working methods and finally to a new way of thinking is difficult for most people to cope with, especially if change is rapid and (too) many issues come together at once.

The requisite speed for change also poses a major challenge. More than 40 percent of companies surveyed are hardly or absolutely not satisfied with the speed of digital transformation in their own company (Figure 12).

Complete digital transformation in a company does not happen overnight. It takes time and an awareness that not every department, team and employee is moving at the same speed, and that change requires a lot of perseverance.

Just as speed does, complexity also plays an important role. And in companies with IT systems and machine parks that have evolved over the course of decades, conversion to new technologies is particularly complex and costly. Conversely, the standardised introduction of new processes, systems and working methods is often difficult for subsidiaries to accept.

Step 5:

How does digital transformation continue?

The crux of the matter for companies surveyed on change is their wish to be well positioned with respect to the future: Times-to-market should be shorter, customers and their needs should play much more of a role in product development, and the desire to develop new, digital business models is repeatedly aired.

If at first sight the multiplicity of measures and different approaches in companies appears aimless and confused, this may certainly well be the case. Very few executives and/or employees now have anything more than theoretical knowledge about digitalisation. The lack of a broad variety of practical experience gained from dealing with practical applications prevents people from acting as experts when it comes to reacting to novel situations and finding solutions. There is only one way to achieve this: “try it out, try it out, try it out!”

Manufactum has a particularly open way of trying things out. Colleagues are continuously encouraged and motivated to keep on trying new things out and testing them. Planning has already taken into account that some such measures are bound to fail. And even if it is not always possible to calibrate clearly the effectiveness of individual measures and pinpoint where improvements are needed, the overall outcome is still seen as a success because it advances the organisation both economically and culturally.

Here, all the companies surveyed are still engaged in the set-up process and trying to create free space and learning space for employees in the organisation through structural measures. Some ideas work, others do not. They must fit the organisation, and the only way to find out if they do is to try them out.

It is crucial to risk a look behind the scenes of the technical line-up (digitalisation behind the curtain), to summon up the personal courage needed to acknowledge error and also to rectify it. “We’ve tried out such a huge amount of stuff that I can now no longer tell you what really helped at the end of the day.” For all their personal optimism, pioneering spirit and willingness to change, people still have to face a corporate structure and culture that in some instances has evolved over years or decades and cannot be changed overnight. Consistently thought out, some changes can perhaps only be successfully implemented once certain people at the decision-making level have left the company.

No matter what efforts, concepts and changes there might be, the same persons are still acting as before the transformation, with all their strengths and weaknesses. Nobody becomes an expert overnight and puts aside disagreeable behaviour. To develop new business models and adapt the organisation both internally and externally, and quickly and flexibly, companies rely above all on one mainstay: lifelong learning which is best reflected in the entire organisation, be it via:

- new opportunities for networking and cooperation in the company,
 - opening up to external influences,
 - new forms of learning in the company, and
 - creation of space for innovation.
- For more on the approaches developed by companies, see the Toolbox chapter.

Satisfaction with implementation

At the conclusion of each field of action, respondents were asked to make a summary and state their degree of satisfaction with the respective level of implementation in their company. The following table shows an overall very positive result; excepting the fields of skills development and leadership, all answers in this spectrum ranged from “generally” to “very satisfied”. With regard to work culture, just short of half (46 percent) of respondents were only partially satisfied (Figure 13).

“How satisfied are you with the current status/degree of realisation in relation to the field of action ... in your company?”

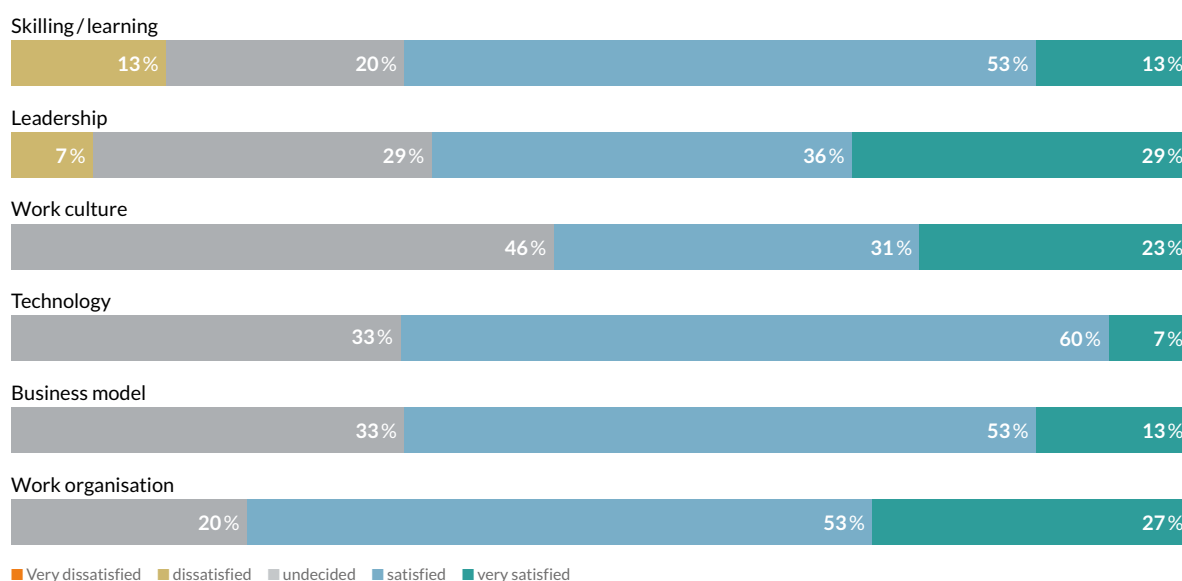


FIGURE 13 Satisfaction with the degree of realisation of digital transformation in the six fields of action (n = 14/15)

Source: Fraunhofer IAO, Bertelsmann Stiftung

As a database for the interview, this calibration of satisfaction was an excellent indicator of the issues currently being implemented in the companies. Interestingly, in each of the fields of action in which the response proved most critical, i.e. for which the level of satisfaction was rather low, measures were currently being considered, planned and in most cases even being implemented. Here change was intended or already taking place. In these fields of action, therefore, the difference between the aspirational target and the current actual state was greatest, either because no implementation had yet taken place or because measures had not yet been established in a transitional phase to such an extent that they could be implemented to the satisfaction of stakeholders.

If we remain in the model of the iterative cycle, even a comparatively good level of technology, as was played back from the data, will not stop at further development and will be further adapted. The same applies to the way the organisation of work is constantly adapted to current events and challenges. For all companies, the handling of data and its utilisation and establishment in the future product landscape for further exploitation of its potential for the business model is the biggest field of action.

Analysis of results showed that calibration of satisfaction in the six fields of action is also related to the assessment of the maturity of the company with regard to the transformation process. Enterprises that show a high degree of maturity with regard to transformation are also satisfied with the status of technology, management, skills development, the business model and the culture of work. Conversely, a low degree of maturity is also indicative of a comparatively low level of satisfaction. The correlation between the degree of maturity and satisfaction with the individual fields of action is shown in Figure 14 by the lines to the coloured areas: the thicker the line, the stronger the correlation, a narrower line stands for a weaker correlation. In this context, work organisation shows the weakest correlation.

Finally, we examined whether there is any correlation between the levels of perceived satisfaction in the six fields of action. We found that satisfaction with skills development depends on the level of respective satisfaction with technology, management, the business model and work culture. The higher satisfaction is in these fields of action, the higher it will be with the state of skills development (as shown by the blue connecting lines in Figure 14).

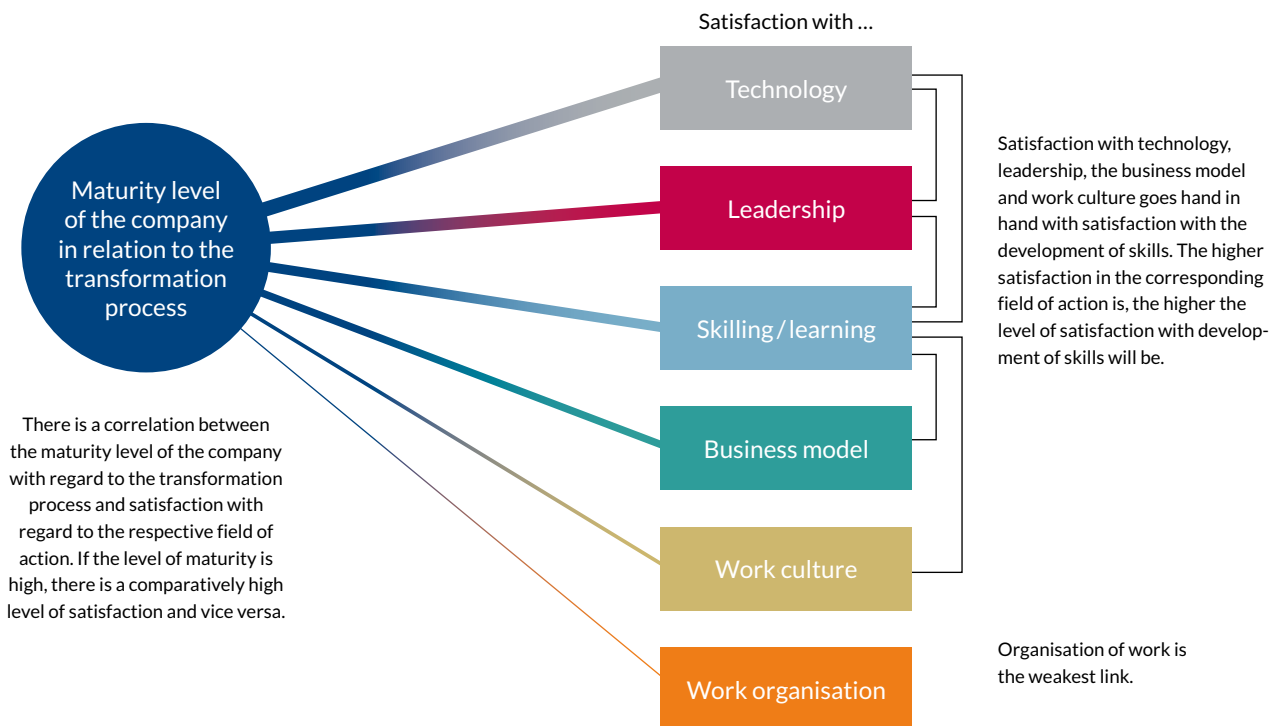


FIGURE 14 Maturity of companies in relation to the transformation process and fields of action

Source: Fraunhofer IAO, Bertelsmann Stiftung

As in the maturity analysis, the link between skills development and work organisation is again relatively weak and forms a separate entity. As work organisation is mainly concerned with the working methods used and their structural implementation in the organisation, it only indirectly affects the issue of skills development, or rather manifests itself in the other fields of action.

Capability for business model innovation

Compared with other findings (Antons, Piening & Salge 2018), managers' assessments of the capability for business model innovation, as surveyed in the Digital Pathguide, are broadly similar. On the whole, the results are comparatively more positive in their assessment; this could be due to the company target group which has a better overall rating and is closer to the action here than may be the case for all the rest of the workforce (Figure 15).

External opportunities and threats are very well recognised so there is less of a problem of awareness than a problem of execution. However, approval drops when it comes to developing new business models where confidence is nowhere near as high as in the other responses. Companies still reach the limits of their capability to change when it comes to interfaces to external partner networks.

The opportunities for influencing the organisation through structural measures have been described in the chapter Step 2: How to Drive Digital Transformation. Figure 16 gives an overview of measures, with the light grey boxes as legally independent units. Ultimately, this is the status of spin-offs, even though they initially come from within the organisation. In general, individual measures have widely different effects. For instance, with its large degree of autonomy, an Innovation Lab operating on a different site and with a separate structure promises a different speed of implementation with respect to innovation than a slowly evolving grassroots initiative in the company.

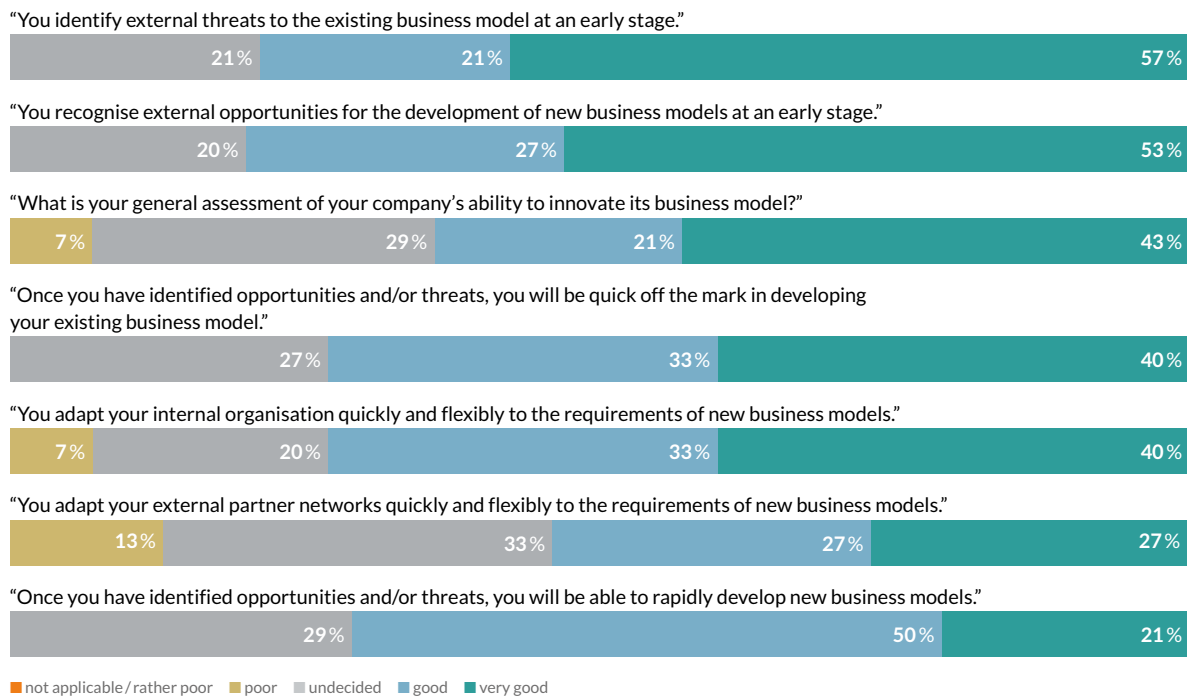


FIGURE 15 Respondents' assessment of their company's ability to innovate business models (n = 14/15)

Source: Fraunhofer IAO, Bertelsmann Stiftung

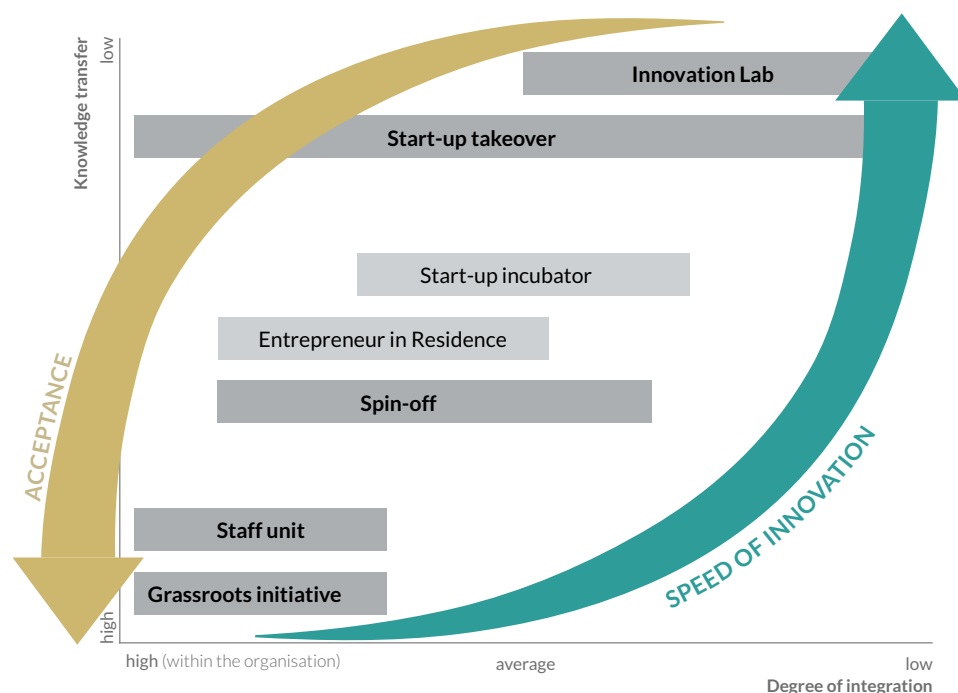


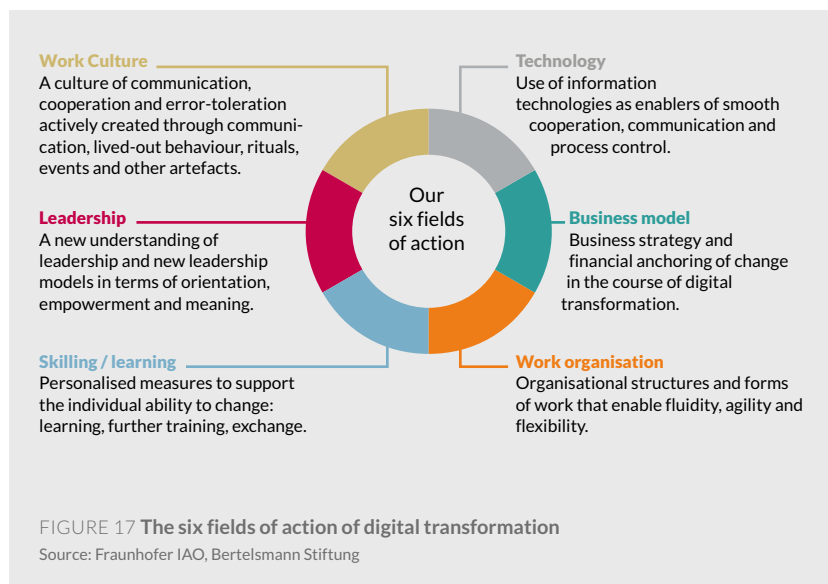
FIGURE 16 Measures for the implementation of digital transformation and their interaction with acceptance and speed of innovation

Source: Fraunhofer IAO, Bertelsmann Stiftung

On the other hand, there is a problem of acceptance. Whatever much vaunted measure comes in from the outside often encounters internal resistance (not invented here!) whilst the internal transfer of knowledge also suffers when transfer is over too great a distance. But approaches developed from within the organisation can also be blocked, if, for instance, the prophet is without honour in his own country or communication does not take place on an eye-to-eye level. Ultimately, such measures are not mutually exclusive, and depend on the objectives and available resources that a company can and wants to set.

Results in Detail

For the six key fields of action of digital transformation



The following section presents the anonymised results of the quantitative survey from the Digital Pathguide. The results of the six fields of action are described in greater depth.

Technology Allocation

Equipping companies and employees with hardware and software

In most of the companies surveyed, IT equipment is allocated according to the needs and work activities of the employees. Here, the hierarchical position no longer plays any significant role. Respondents interviewed stated that employees are provided with all the technical equipment they need in order to carry out their respective jobs. They themselves can decide what

“Employees are provided with all the technical equipment they need to carry out their respective jobs.”



FIGURE 18 Equipping employees with technical devices (n = 14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

“How satisfied do you think your employees are with the devices provided?”

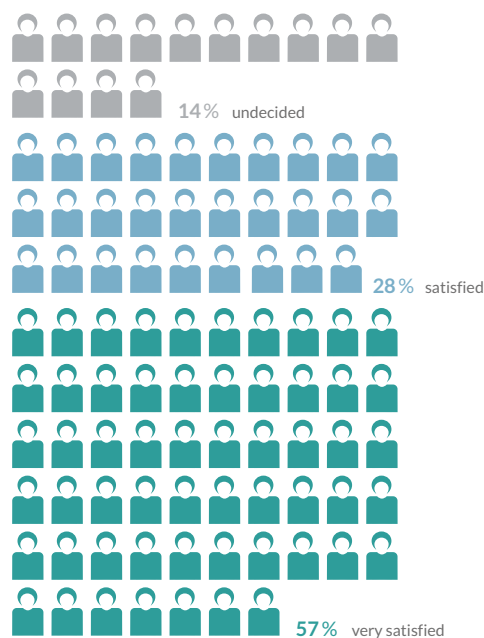


FIGURE 19 Employee satisfaction with technical devices (n = 14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

technical IT equipment they need for their work. Moreover, the majority of the workforce is satisfied with the IT equipment provided – at least from the employers’ perspective (Figure 18).

This is a situation that by no means holds true for all employees in German companies, as the results of the D21 Digital Index (Initiative D21 e.V. 2020) demonstrate. The employees surveyed here believe that the needed infrastructure of devices and access to mobile working is not sufficiently provided by employers, and only a fraction of employees have the devices required for digital transformation (Figure 19).

Apart from their technical equipment, employees also have good software. In addition to office applications, collaboration and communication tools are also provided including video conferencing tools (86 percent), cloud services (64 percent) and other tools (71 percent), like instant messaging services (e.g. Slack) and task management services (e.g. Trello). These results stand in stark contrast to the findings of the meta-studies cited above and underscore the pioneering role played by the companies surveyed.



FIGURE 20 Provision with software and applications and employee satisfaction with them (n = 14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

Figure 20 shows the top five responses to the question, “What software or applications do you give your employees?” and the level of satisfaction according to the ranking of the question “How satisfied do you think your employees are with the software/applications provided?”

The results of the study by Grzymek and Wintermann (2020) also show a fairly high penetration of digital working methods in companies. 42 percent of those surveyed in this context express the desire for a more modern and digital working environment. On the other hand, 40 percent (still) reject this. The authors of the study conclude that this is where two working cultures meet – which tends to be seen as unproblematic for the companies surveyed here.

However, final approval is still often given by management, and in some cases numerous approval processes are needed if the equipment falls in a (higher) price segment. This is intended to facilitate demand-oriented allocation of hardware and software whilst also ensuring that the procurement of more complex equipment and applications is subject to a multiple control principle.

Some of the companies in our case group are experimenting with new forms of self-organisation, also in terms of the allocation of IT equipment. At Pickert & Partner, employees can decide for themselves which equipment and applications they would like to have procured. However, since figures are transparent within the team, they must be able to justify and defend their decisions to the other team members. Furthermore, the necessary investment must be financed and covered by income from customer projects.

New procurement guidelines, IT usage agreements and company agreements, such as those on the issue of Bring your own device (BYOD), are establishing themselves as effective instruments, especially in larger companies, for creating clarity in the use of IT and ensuring that all employees are equipped according to their requirements.

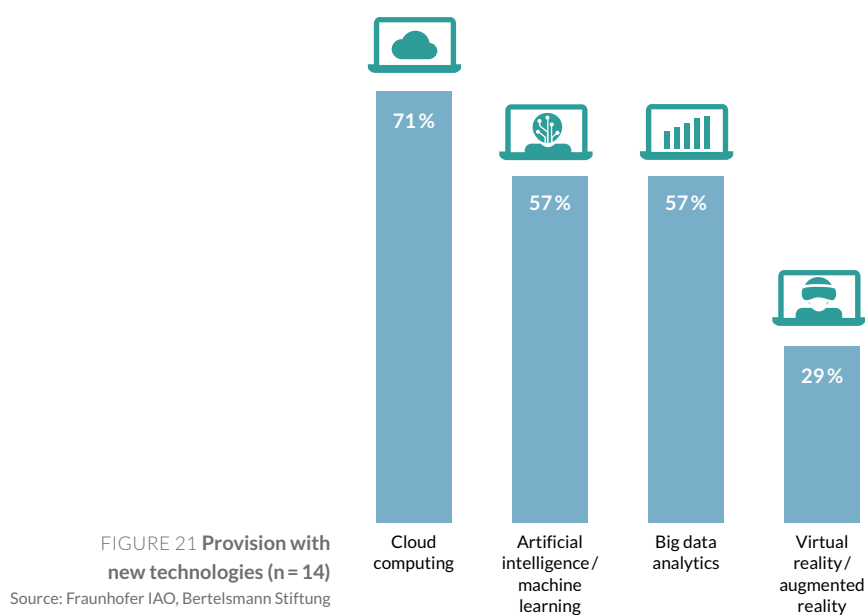
The overall results of the questions on the IT equipment provided by the company indicate an excellent starting position. We should not forget that the 15 companies surveyed are a positive selection, one which is not necessarily representative of the German SME sector as a whole.

Introducing new technologies into companies

Alongside cross-company hardware and software equipment as enablers of new forms of communication and collaboration in the company, other new technologies are also integral parts of the successful move to digital transformation (Figure 21).

Cloud computing, i. e. moving storage space, computing power or application software to the cloud, is already a matter of course for most companies. At the same time, other technologies are making their way into business processes. Each company is experimenting in its own way and according to its own specific needs with possible applications of these technologies.

Artificial intelligence (AI) is mainly used in statistical analyses in the preparation of company data, and in the development of forecasts, for instance, with regard to procurement processes and turnover trends. However, the potential of AI is far from being exhausted with data evaluation. AI-based software can make real-time decisions on its own: it can decide, for example, which advertisements are shown to which customers, or it can detect anomalies and security problems in the company's systems.



In particular, the combination of AI and big data analytics seems to hold out great potential. AI should help companies prepare and analyse huge amounts of data. Almost all the companies surveyed are already dealing with big data (for more on this, see the chapter on Handling Data in Companies).

Virtual and augmented reality are also becoming increasingly important, although their practical use in companies is still very much in its infancy. Some see this technology as a learning aid for employees, for instance to give them tangible experience of workplace safety measures, while others are experimenting with the use of these technologies on the customer side to improve handling of their products.

Irrespective of the areas in which these new technologies are used, they are seen as supporting rather than replacing human work.

No matter how great their willingness to experiment might be, most companies try to focus only on a handful of selected technologies in order to avoid using too wide a range and risk frustrating both staff and customers. This is especially true for smaller companies whose available resources are much more limited.

Data handling in the company

Digitalisation of products and work processes means that the company generates and stores a huge amount of data. How this data is used depends strongly on the particular company and type of data. In all the companies surveyed, data protection has the highest priority with regard to both customer and employee data.

When handling data, it is necessary to distinguish between customer data, company data, and employee data.

Customer data is mostly used for forecasting and production control. Figures and information on customer orders are sometimes used as production forecasts. In addition, ordering behaviour is also being increasingly evaluated with a view to classifying customers and enabling a custom-tailored customer approach.

CASE IN POINT

The CEWE Customer Charter: Digitalisation with responsibility

In its Customer Charta, CEWE has formulated its position on the new possibilities of digitalisation (including AI) and in particular on the handling of customer data. The sections of the charter (including customer-centricity, transparency, and no forwarding of customer data to third parties) are always the subject of discussion with an external advisory board and customers and are thus continuously being adapted and developed.

Digitalisation also serves to increase the transparency of company data. Business analytics solutions are used, for instance, to present data and figures in a way that can be readily understood by everyone, or for digitally mapping of all company processes to make essential data available to management at all times so that they can be quicker off the mark in intervening.

With regard to customer and company data, we can identify a three-stage maturity model:

- The first stage provides for systematic data collection as a prerequisite for subsequent structured usage. This includes harmonisation of data in and beyond individual departments.
- The second stage deals with preparation and provision of data, e.g. in the form of dashboards and cockpits.
- The third stage enables (automated) action to be taken with the help of the data analysed and processed e.g. with a view to forecasting or making an individualised customer approach.

Employee data is collected in service companies primarily as a basis for billing for services. For instance, working hours can be documented in this way and invoiced to the customer. As a rule, employee data is not evaluated in the companies surveyed. Should this be the case, then it is usually only averaged values in a general form, such as key figures on team utilisation or capacity.

While new technologies enable collection and analysis of much greater amounts of employee data, companies often deliberately shun this with a view to ensuring employee confidence in the way they handle data. Generally speaking, the Basic Data Protection Regulation (DSGVO) obliges companies to disclose both to their customers and employees what data is collected and evaluated about them and, conversely, even to communicate openly that no such data has been collected.

Transparency, which also results from the processing of employee data, can have a twofold effect: on the one hand, it can have a positive effect in the sense of employees' pride in their own performance and the way this is perceived within the company, while on the other, its effect can be negative in the sense of control, increased internal competition among colleagues and departments and a certain amount of (social) pressure.

The Business Model

Digitalisation leads to a change in market position

Digitalisation of products and processes also leads to change for the companies surveyed, usually in terms of improving their market position (Figure 22). While some are more in the public eye and enjoy cross-industry attention, others are lauded as innovation leaders in their industry. Furthermore, the number of customers and profitability of these companies also increases. However, change does not merely affect their position vis-à-vis their competitors in the market, but in some cases can also lead to a transformation and repositioning of their own brand, which in our understanding is closest to a change in the business model such as, for instance, a change from a pure product manufacturer to a solution provider or from a technical solution provider to more consulting expertise.

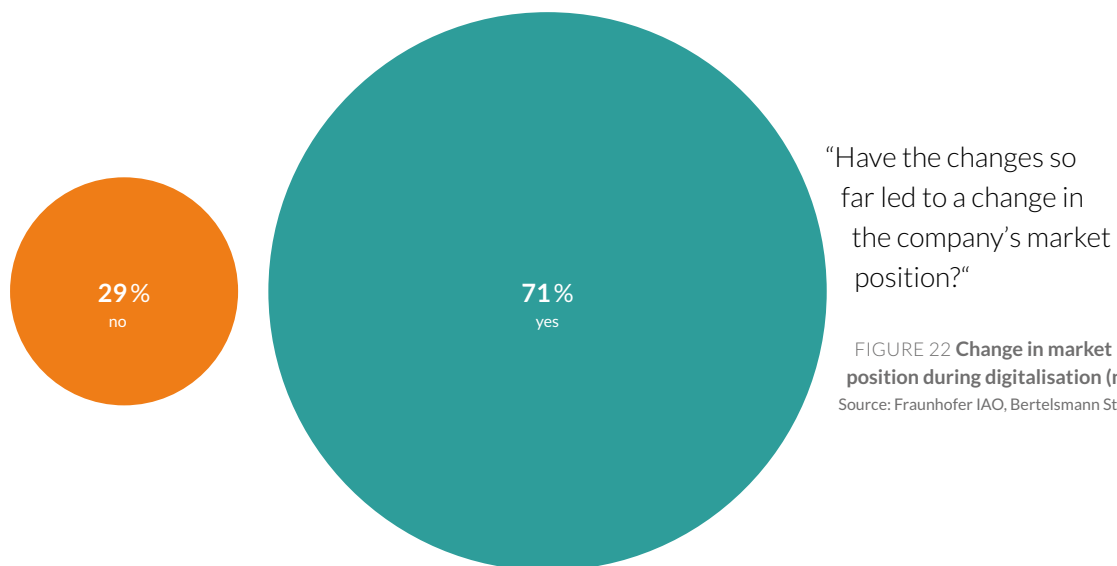


FIGURE 22 Change in market position during digitalisation (n = 14)
Source: Fraunhofer IAO, Bertelsmann Stiftung

Two-thirds of companies see transformation of their own business model as the objective of digitalisation

In terms of the goals pursued by digitalisation in the company, all companies put the focus squarely on economic factors such as improving their strategic competitive position, and meeting customer requirements. When it comes to more implementation-oriented objectives, process improvement, flexibility and agility head the list for around three-quarters of those surveyed. Reviewing and changing their business model is still top priority for a good two-thirds of the companies surveyed, ranking equally with customer loyalty and cost savings (Figure 23). It might be of rather secondary importance in terms of the overall project, yet should be a key priority in all specific digitalisation efforts, one that provides a very clear answer to how money will or should be earned in future.

“What goals are you pursuing with the digitalisation of your company?”

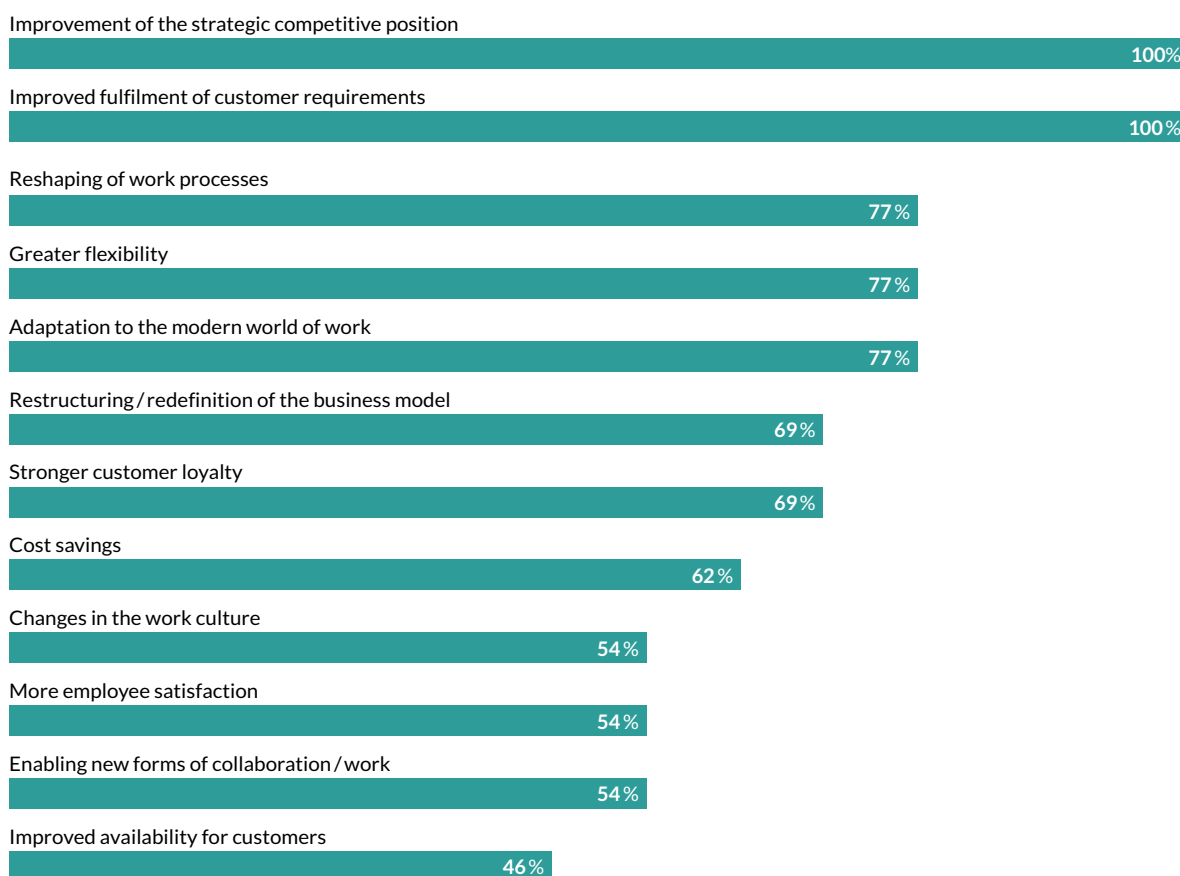


FIGURE 23 Companies' objectives during digital transformation
(multiple answers possible, n = 15)

Source: Fraunhofer IAQ, Bertelsmann Stiftung

“What working time models do you have in your company?”

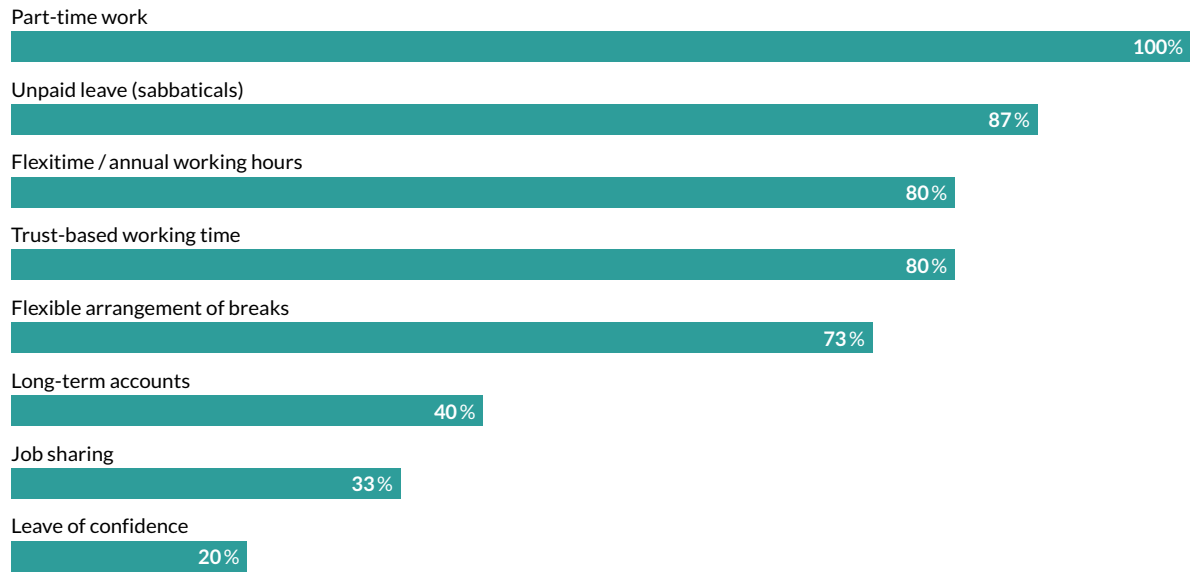


FIGURE 24 Working time models practised in companies (multiple answers possible, n = 15)

Source: Fraunhofer IAO, Bertelsmann Stiftung

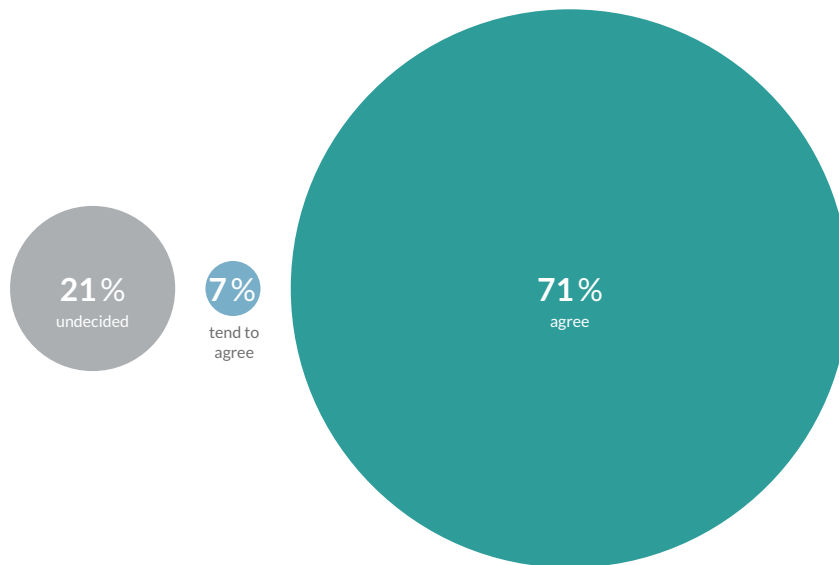
Work Organisation

Flexibility of places and times of work

The companies in our case group are particularly well situated with regard to flexibilisation of working hours: part-time work is possible in 100 percent of all companies surveyed, flexitime models and trust-based working hours are used in 80 percent of companies, while 87 percent of those surveyed provide for unpaid leave, for instance, in the form of sabbaticals for their employees (Figure 24).

Mobile working, i.e. working at another company location, at the customer's site or from home, is possible in all companies, as far as the type of work allows for it. However, the possibility of working from home at a workplace equipped by the employer is only possible in every second companies. More than 40 percent take advantage of new forms of extramural work by offering their employees opportunities to work occasionally in co-working spaces.

Even though the first steps have already been taken, the field of mobile work still has much room for improvement. The questions of whether mobile work and working from home should be permitted, and if so who should do it and when, is sometimes subject to highly individual regulation or depends on the discretion of individual managers. Team, departmental and company agreements to regulate working from flexible locations have not yet established themselves as standard.



“In principle, mobile working is conducive to the quality of work.”

FIGURE 25 Impact of mobile working on the quality of work (n = 14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

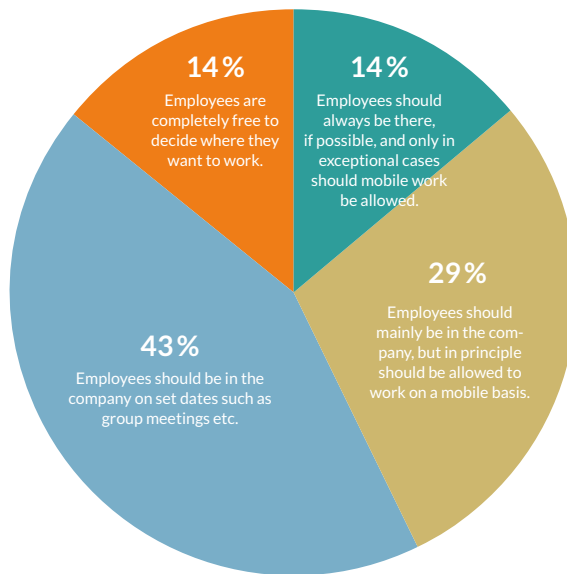
Between flexibility and a presence culture

At almost 80 percent, the majority of companies believe that mobile work is fundamentally conducive to the quality of work results. Even though there is also a marked percentage of undecideds (21 percent), no company considers the above statement to be incorrect. And as all respondents had stated that mobile working was possible in their companies, this positive basic attitude comes as no surprise (Figure 25).

Yet despite all the positive basic attitudes and all the opportunities employees might have in principle in their companies, the outlook of actual practice is still not so rosy. Some of the ways in which mobile work is regulated are still prohibitively rigid, i.e. limited to two days a week or they might offer this possibility, for instance, within the terms of a company agreement, but fail because of cultural constraints. The physical presence of employees in the company is then expected – because implicit in such an expectation is the widespread misconception that people just laze around when they work from home.

Looking at the data on the perceived culture of presence in the company as given in the Digital Pathguide, it is also striking that here too actual presence in the company still seems to be an important factor (Figure 26):

- In 14 percent of companies, mobile work is only desired in exceptional cases.
- Mainly compulsory attendance with the basic possibility of mobile working is stated as the norm by 29 percent of companies surveyed.



“If the possibility of mobile working is given: How important is the presence of employees in the company to you?”

FIGURE 26 Importance of the presence of employees in the company for employers (n = 14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

Yet here too there are positive tendencies with regard to individual flexibility. Near to half the companies surveyed grant their employees more freedom:

- Either they only have to be present in the company for important meetings (43 percent),
- Or they are at complete liberty to decide whether to be present or not, although only a small proportion (14%) of companies offer this.

So while the vast majority of companies see the benefits of mobile work, there are still clear differences in implementation. With the outbreak of the coronavirus pandemic, many companies in Germany were very quick off the mark in creating an opening for their employees to work from home in order to maintain their ability to do any work at all. At the moment, it still remains to be seen how attitudes within companies will change when specific empirical data is gathered on this very extreme form of decentralised service provision.

Working methods must be tailored to the task, the team and the customer

Different working methods and project management approaches are used in the companies surveyed, depending on the team and the jobs involved. A colourful blend of classic waterfall-model-based approaches to projects, and agile methods and instruments is noticeably emerging. Agile project management is already well established in more than half the companies surveyed, and the same percentage of companies also indicate that they use more traditional approaches to project management. Among the agile methods, Scrum and Kanban are particularly popular, “whose benefit is not, however, reflected in the status of a certificate obtained, but in the selection,

adaptation and application of the right kind of tools in response to specific situations. The working methods of respective teams might vary considerably, but are geared to the specific needs of customers and thus offer different islands for employees to choose from,” says *ANDREAS KÄMMER*, managing director of comspace.

For the majority of those surveyed (67 percent), hybrid project management consisting of both classic and agile components is part and parcel of everyday life.

The golden rule here is: the working method or project management approach should be tailored to the job in hand, the team and, ideally, the customer. “Agility above all else” does not have to be the rule. On the contrary, agile methods should only be used wherever appropriate.

Individual teams often start experimenting with new, agile methods. The new ways of working spread rapidly driven by the visibility of role models (Tom does it / Eva does it too). And so the leap from individual cells to the entire organisation is continuous and on a voluntary basis.

“Which of the following working methods do you use in your company?”

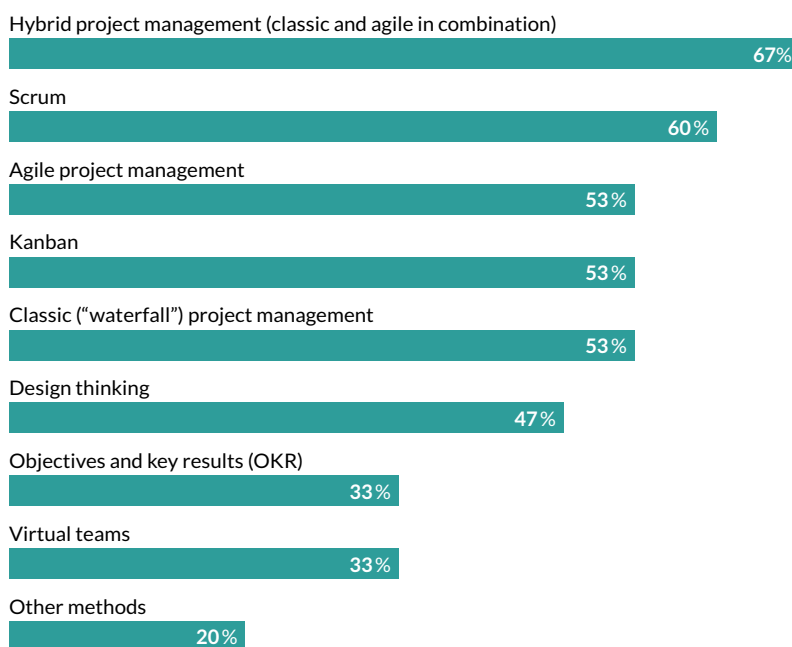


FIGURE 27 Working methods used in companies
(multiple answers possible, n = 15)

Source: Fraunhofer IAO, Bertelsmann Stiftung

Even so, such gradual propagation of new working methods does not occur in all the companies surveyed. This is partly due to the fact that agile methods are not suitable for certain jobs or because the way of working is often simply too particular: employees all tick differently and each has their own preferences as to how they work best.

This can lead to friction between different structures, working methods and teams. On the one hand, where classical structures and framework conditions meet modern methods, such friction could be due to possible contradictions between classic budgeting and agile project management, and on the other, where differently organised and working teams come into contact and must join forces. Larger companies are also often confronted with the challenge of introducing new working methods to their subsidiaries and reconciling them with the structures and work culture prevalent there.

Here, one thing is of the essence: transparent communication – which is best complemented by broad participation and open dialogue between all participants.

CASE IN POINT

Targeted discussion with colleagues of different ways of working at R+V Versicherung

R+V Versicherung has a digital workshop which is physically separate from headquarters and deals with innovation projects. When it was newly established, parts of the staff felt that it was a regular place of blissful creativity ("La Paloma"). This preconception was challenged by the targeted on-site discussion in which the highly structured, highly focussed and lean-agile work of the think-tank workshop was explained and illustrated. What had been taken as wonderful work was then seen and recognised in a different light. At the same time, the discussion also provided a number of pointers on how work in traditional structures could be further developed.

Use of new working methods also proves difficult at external interfaces when other service providers or institutions are involved in the work process.

There are also points of friction with some customers, when their identification with deadlines and milestones is made difficult by the Scrum approach practised in sprint cycles.

"How strong do you think is the need for your company to adapt to new circumstances?"



"Does your work culture promote the recognition and analysis of mistakes, and learning from mistakes?"



"How do you rate the attitude of your employees towards change and their willingness to try things out?"



Not applicable / rather poor (yellow) poor (grey) undecided (blue) good (teal) very good

FIGURE 28 Business attitudes to change and mistakes (n = 14/15)

Source: Fraunhofer IAO, Bertelsmann Stiftung

Work Culture

Learning how to be adaptable by learning from mistakes

Where it is necessary to continuously adapt to new circumstances, a fast and effective innovation process is essential. Such a process should encourage the willingness to try things out whilst also allowing for failure.

The companies surveyed show a positive and learning-oriented work culture in dealing with mistakes. In companies that have a special department for dealing with digital transformation, this has a more pronounced toleration of error than other departments. The "Fail Fast" paradigm is particularly important here: errors must be made and identified rapidly before too many resources are squandered on them.

Most companies share a common proactive attitude towards mistakes which can be described by the term "a culture of learning in dealing with mistakes" as opposed to "a culture of error" (Figure 28). Error analysis should go beyond identification of culprits to identify the root causes of error and learn lessons from them for the future. Such a work culture ensures that employees take pleasure in experimenting and are thus open and well-disposed to change.

CASE IN POINT

Post-mortem workshops and 'fuckup nights': Error culture at the Otto Group

At the Otto Group, errors are seen as a normal part of the digital transformation process. Some departments discuss failures and bad decisions in specially designated events, the so-called 'post-mortem workshops', that aim at drawing the right conclusions from mistakes and reducing the risk of repeating them.

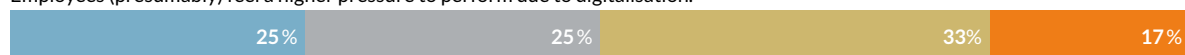
At the corporate level there is the format of the 'Fuckup Nights', where mistakes and failures can be openly shared across hierarchies and discussed in large groups. This is intended to increase the robustness and resilience of the company.

Pressure to perform and breaking down boundaries

Digital transformation is leading to changes in working culture. Such changes can increase the burden on employees. For example, half the companies state that "employees tend to feel greater pressure to perform as a result of digitalisation". This statement holds true for 17 percent of the companies; 33 percent of those surveyed say that it is more likely to be true. No company rejects this statement completely.

A similar picture emerges, albeit not as drastic, with regard to delimitation of labour (Figure 29). The assertion that the digital world of work is breaking down boundaries and that employees feel they must be available at all times is agreed with in principle by 41 percent of the companies surveyed, i.e. by slightly less than half. In this case, however, only 8 percent "fully agree", and the number of undecideds at 33 percent is stronger than the perceived pressure to perform. At 17 percent, there is also a noteworthy proportion who consider the statement incorrect. This can be explained by the fact that the opportunities for flexitime and mobile working differ from company to company in our case group. The breaking down of boundaries through (felt) constant accessibility is strongly related to the number of opportunities for flexible mobile work and how they are used. Furthermore, a relation with a working culture can also be conceived that dates back to analogous times and demands constant availability.

Employees (presumably) feel a higher pressure to perform due to digitalisation.



Employees experience a dissolution of boundaries through digital working methods and feel they must always be on call.



■ Not applicable ■ tend to disagree ■ undecided ■ tend to agree ■ agree

FIGURE 29 Effects of digitalisation on employees (n = 11/14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

Through data analysis and usage, new forms of cooperation and thus also of personal transparency (through, for instance, availability indicators, joint editing of documents or assessment of articles), a felt measurability is manifested which can have positive effects such as pride in work well done and its transparency or negative effects such as promoting competitive situations and control. This depends on the personal disposition of employees. None of the companies actually collect data for individual performance monitoring or use it in the above-mentioned form.

In general, the managers surveyed have a wide range of differing opinions about the situation of their employees. The employees' own perspective on their situation would make a fascinating enrichment to the discussion.

Management

The role of middle management

When it comes to the role of top management, its role model function and attitudes to the transformation process have all been clearly and positively documented, which may partly be due to the fact that such disclosure is by way of self-disclosure.

With respect to all levels of management in a company, it is striking to say the least that around 70 percent of them give the highest priority to working on the transformation process or are themselves setting a good example as role models by adopting new ways of working (Figure 30). For one third of them, this is only partially true or hardly so at all – although this is hardly surprising: not all employees in every company will be ready to greet change with open arms.

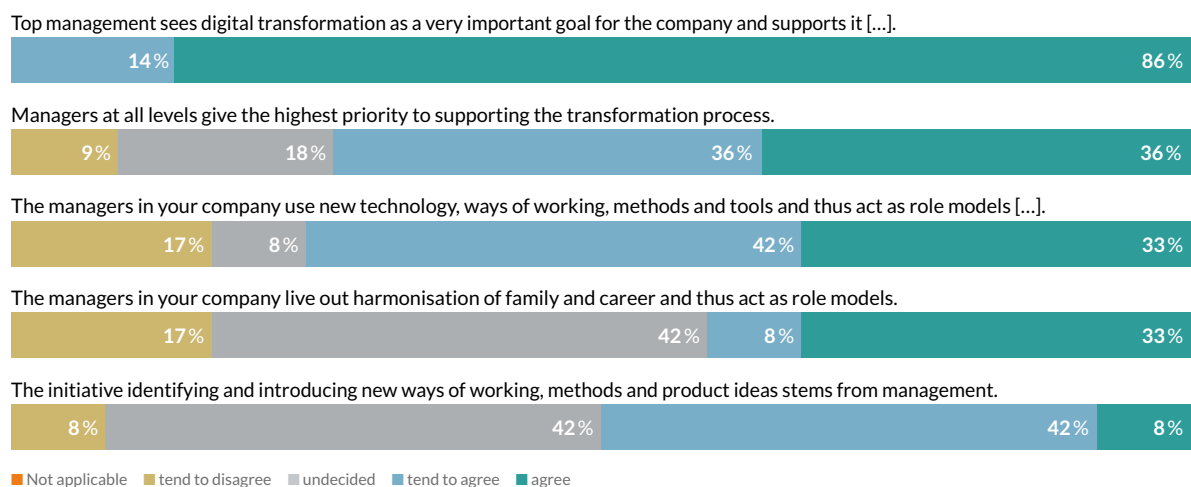


FIGURE 30 The role of managers in digital transformation (n = 11/14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

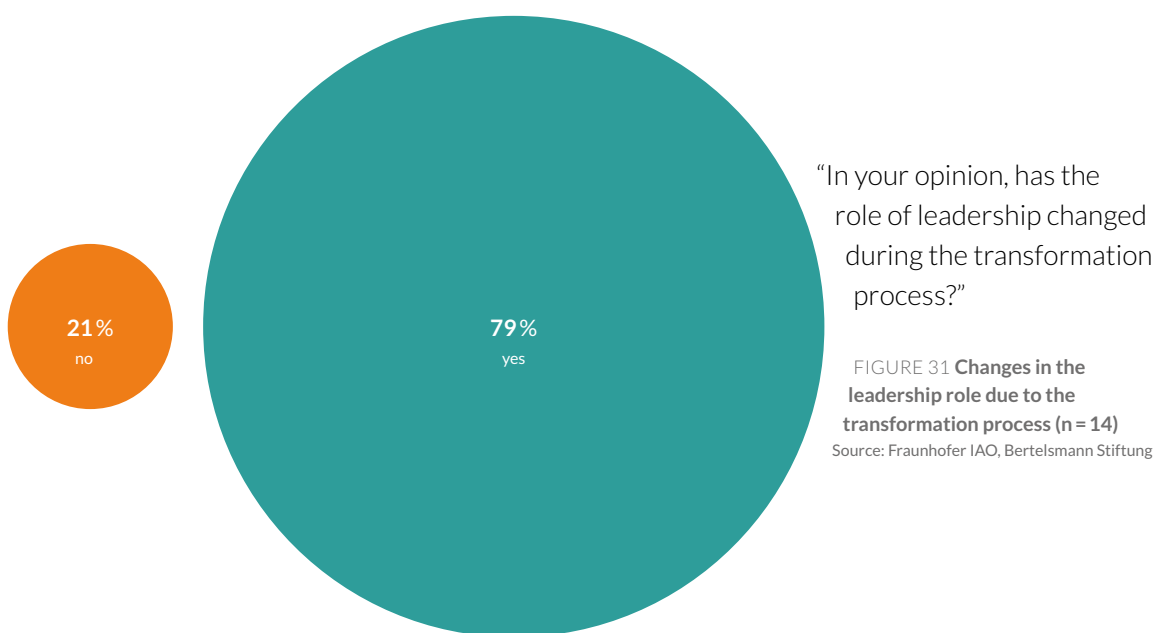
A significant decline in assent is evident in terms of the exemplary role played by managers in reconciling work and family life. Here, at 42 percent the largest response block is of divided opinion as to whether managers in the company do play such a role. The same picture emerges when asked whether managers who identify new working methods or product ideas are also acting on their own initiative, whereby it should be noted that some companies did not respond here or did not respond in sufficient detail to show that initiative comes from both managers and employees, which in turn should be seen as positive.

Changing the role of leadership

“The ideal manager should have big ears and a big heart,” says *DR FLORIAN NEYMEYER*, Head of Human Resources, IT & Legal Affairs at Uzin Utz AG.

Even though new management approaches are not yet always reflected in organisational structures, a change in the understanding of leadership is still taking place across all companies. The question of whether there will be a change in the management role during transformation was answered in the affirmative by 79 percent of those surveyed (Figure 31).

True to the motto “Leading is much more than managing”, managers are increasingly becoming coaching and sparring partners, orientation providers, eye-level moderators and enablers for their employees. Their role in transformation consists above all in living out and exemplifying change as role models, and in challenging and encouraging their employees in the process.



Skilling/Learning

Top 5 competencies: Tools for digitalisation

New skills profiles are emerging in the course of digital transformation that play an important role both in recruiting and developing personnel. The search for, and continuous development of, these new skills is one of the central tasks of HR in an era of digitalisation. If employees are trained in a wide range of skills, companies can be more flexible in their deployment of personnel and are no longer dependent on just a few specialists.

All companies rate a sense of personal responsibility and the willingness to engage in lifelong learning among the essential skills of digitalisation. Employees should be able to take decisions on their own responsibility and work independently (Figure 32). It is the way to promote the potential and self-confidence of individual employees. Beyond that, there is no point at which the learning process can be considered as complete. Just as technology is constantly developing and constantly changing the working world, employees are expected to be willing to engage in lifelong learning.

“What digital skills do you think your employees need for digital transformation?”



FIGURE 32 The skills profile for digital transformation (selection of the top 5, multiple answers possible, n = 14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

Communication skills (93 percent) are another essential digital competence. Communication is strongly influenced by digital change. New technologies offer new opportunities. If employees can handle these technologies well, effective communication is ensured. Problem-solving skills have the same percentage (93 percent) and are therefore considered as equally important. They refer to the ability of employees to recognise problems quickly and independently and to provide them with satisfactory solutions. Ultimately, the whole team benefits from the individual problem-solving skills of each individual.

86 percent of those surveyed see the ability to think and act in a networked manner as a further core skill. Networked thinking enables identification of cause-effect relationships in complex systems. With the increasing number of interfaces, and different ways of working and directions in the context of digital transformation, this skill has come to the forefront as vital for maintaining an overview of the digital transformation process and for gaining an understanding of its complexity.

IT skills are not among the top 5

Surprisingly, skills for the digitised workplace, such as the ability to work virtually (46 percent), expertise in collaboration software (39 percent) and the ability to analyse data (15 percent) come in at the bottom of the list, even though virtual work is becoming increasingly common and new technologies such as AI or big data are (or should be) finding their way into companies. After all, a high level of IT skills (54 percent) is seen as an important asset by a good half of those surveyed. Very often, however, companies are only looking for specialists with the appropriate know-how, and show little interest in equipping their employees with a broad range of skills that make them broadly employable.

Skill levels: managers and employees on an equal footing

When it comes to the digital skills of employees across the whole of the company, the picture that emerges is a very heterogeneous one. The degree of digital literacy depends on many factors, including company divisions (industrial vs. commercial), business units (holding vs. innovation units or vs. other sites/company subsidiaries) or on the mindset of the individual (technophile vs. technophobe). In general, respondents found it difficult to give an average value for all employees and managers (Figure 33).

“How do you rate the digital literacy ... ?”

of your managers



of your employees



very low low undecided high very high

FIGURE 33 Assessment of the digital literacy of managers and employees (n = 13/14)

Source: Fraunhofer IAO, Bertelsmann Stiftung

Particularly in larger companies with a highly heterogeneous and differentiated workforce, employees are sometimes of different opinions about what digitalisation means and what skills are needed for digital transformation. For some, e-mail is a foreign word, for others digitalisation means a new iPad while still others see it as a new vision for the future of the company and have very high expectations of the development of digital skills.

Belonging to a younger or older age group does not seem to have a major impact on digital literacy, a finding that is also reflected in a similar distribution in the estimated level of digital literacy of employees and managers. This finding is in line with the results of the Grzymek and Wintermann study (2020). Rejection of a digital working environment increases significantly only in the 60+ age group. However, some companies report a lack of technological savviness on the part of their managers, particularly in view of the role model function in digital transformation they are supposed to fulfil. This may be because such managers tend to belong to an age group that is generally not digitally socialised. However, this is not always the case in the overall view.

Even membership of an IT-related industry and a technical and professional background in IT does not necessarily mean a higher level of competence in the use of digital tools – here too, use of communication and collaboration media must be learned.

Young geeks and old hands: the mixture makes the difference

Even though the link between age and digital skills is not stringent, most companies view their younger employees as important trendsetters and drivers of digital transformation. With their – on average – full-blown acceptance of technology and their eagerness to try things out, they bring a breath of fresh air and a new spirit to the company.

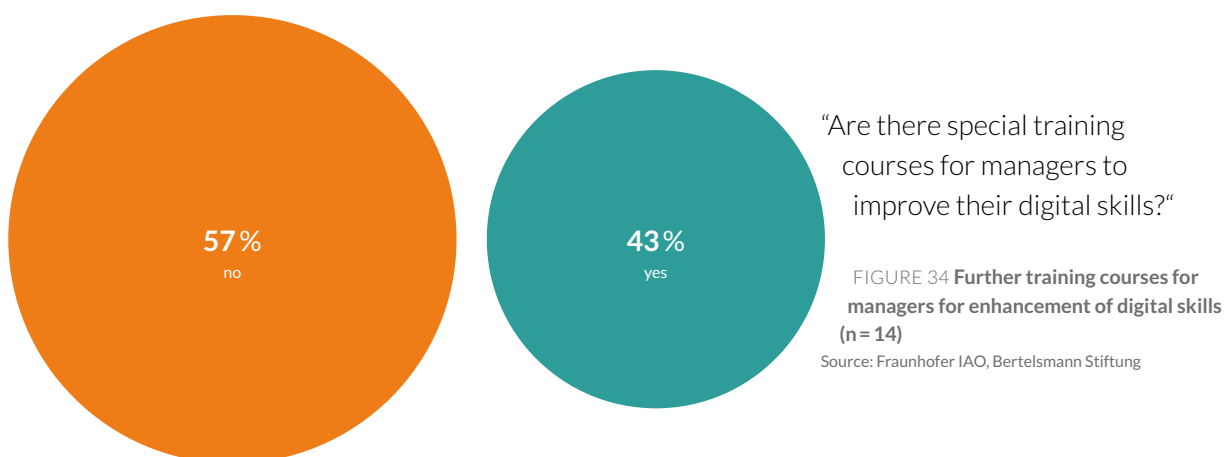
Ideally, the younger employees, who tend to be enthusiastic about technology, work together with older colleagues who tend to be well networked in the company. Working together, they create the right conditions in which digital transformation doesn't just fizzle out like a short-lived craze but becomes firmly embedded in the company's processes and structures.

In some companies, young, technology-savvy employees play a special role by supporting their technically less gifted colleagues in dealing with new hardware and software, thus providing in-house, on-the-job training in new technologies. In return, both young and new employees come to feel that they are respected and are playing an important role in the company. The bottom line is that not only productivity but teamwork too benefits from such interaction. Read more about this in the Toolbox chapter.

Further training: even managers must extend their skills

To improve their digital literacy, managers and employees are usually offered internal or external training courses.

However, specific further and advanced training for managers, whether to improve their own digital skills (e.g. leadership from a distance, sensitivity to employees' different media preferences) or to support and assist their employees during transformation, is not planned in most cases, as Figure 34 below shows. Half of all companies state that they have never made a specific offer for further training. Even so, a negative answer can also imply that as there are no longer any managers in the company, specific training courses are rendered superfluous.



Here there is much scope at the top: Middle-level managers often find themselves in a challenging situation, caught in a kind of sandwich situation in which they act as mediators between strategic requirements from above, i.e. from the executive board or top echelons of management, and the needs and requirements of employees who implement these requirements in their daily business. This calls for special leadership skills, including moderation and communication skills (for more on this, see the chapter on The Ability to Innovate Business Models, Changing the Leadership Role), which ideally are taught in special training or coaching sessions.

CASE IN POINT

Potential-centric further education at DKB

At DKB, the focus in matters of further education and training is on promoting individuality and diversity – in line with the motto “Strengthen strengths!” – and not on focusing on deficits or following a one-size-fits-all approach. This means that close attention is paid to the different learning speeds, interests and life phases of employees. DKB attaches particular importance to supporting and accompanying managers during digital transformation, and especially in the transition to a new understanding of leadership. Apart from a school of management, the support and further education programme includes a large number of coaching sessions and seminars organised both internally and with the support of external partners.

Toolbox

Creating New Opportunities for Networking and Cooperation within the Company

The right kind of software strengthens networking within a company by digitally facilitating collaboration, coordination and communication while also creating new opportunities.

Practical examples, classed by overarching issues, but not clearly separated, are:

IP telephony and video conferencing tools: Using video conferencing tools (such as WebEx, GoToMeeting, Samepage or BigMarker Web Conferencing), regardless of physical proximity, employees can communicate and interact on a level comparable to interacting in the same physical space.

(Agile) project management tools: Software (such as Jira, Trello, Wrike or Kanbanize) to optimise transparency and flexibility of projects and workflows. Tasks are clearly assigned and employees responsible can be reached via direct channels. Tasks can be distributed in an uncomplicated manner, comprehensible for all those involved.

Corporate wikis: In-house knowledge databases (such as Confluence, Foswiki, PmWiki or TWiki) that allow employees to share their knowledge and search for solutions. Through corporate wikis, each individual contributes to the collective knowledge base.

Messaging: Messenger services (such as Slack, Rocketbots, Troop Messenger or Google+ Hangouts) enable employees to communicate directly and easily.

Social Intranet: The basic concepts of social networks, such as the ability to follow and link with each other, are combined with the traditional functions of business software. Examples of this include eXo Platform, Simpplr, Jostle and Happeo.

Collaborative authoring tools: Through co-authoring tools (such as Google Docs, Elucidat, Composica, EasyGenerator), employees can simultaneously work on a document with colleagues and project partners.

Despite all the advantages of digitally supported types of communication, physical proximity to companies is still important and is also actively encouraged. Here, a place of socio-emotional interaction is made possible, which can be created digitally with 'likes' and 'smileys', but which quickly reaches its limits when communication becomes problematic. Alongside digital networking, newly created spatial communication zones are also places of chance encounters, knowledge transfer and networking while spatially located project areas promote cooperation across departmental boundaries.

CASE IN POINT

For transfer of knowledge in a matrix organisation, Maschinenfabrik Reinhausen draws programmers from individual divisions to a physical place of exchange. Here, they are given desks to share that make it easy for them to communicate with one another in their everyday work.

Establishing a New Learning Culture

As they embrace digitalisation, some companies are also turning away from the traditional forms of further education and training. Instead of banking on a certificate after finishing training, employees should learn together, through informal learning, interaction and communication with other colleagues, acquiring skills, for instance, in the handling of new software and new challenges. More experienced or more technically savvy employees are encouraged to help those who have difficulties in dealing with the new. Topical discussions during work breaks and reading and the joint discussion of books are also encouraged.

Below are some practical examples of informal learning on-the-job, where employees deal with pressing problems in their everyday work and learn from their experiences:

Lunch-time Know-how & Brown Bag Lunches: The lunch break becomes a combination of a learning event and lunch. In an informal setting, employees at Siegwerk Druckfarben talk casually about what they do in their jobs and have the opportunity to learn from each other.

Mentoring by young employees: Digital natives with an passion for technology can be of valuable assistance to less technically skilled employees in contributing their know-how and helping them learn new software. Such a helping hand is a tremendous support in everyday life. Establishing such assistance in a self-organised way involves ensuring that plenty of time is available and that the help can be accepted – without any loss of face – by people mentored. Such a model has proven highly successful at the Haack-Yol Care Centre.

Barcamps: An event lasting several days, without a fixed programme, that focuses on intercommunication of participants and the exchange of know-how. Although a skeleton schedule is fixed in advance, the content of workshops, the speakers and topics of discussions are all set directly by attendees themselves.

Open Space: Comparable to barcamps, the course and especially the agenda of the conference are almost exclusively determined by attendees on site. However, the focus of an Open Space is not primarily on the exchange of knowledge, but rather on developing specific strategies for action.

Fishbowl discussions: Discussions in a circular seating arrangement with several levels. Participants in the inner circle lead the discussion, while those in the outer circle follow it in silence. Any person from the outer circle can take a seat in the inner circle as soon as one becomes available. Fishbowl discussions are used to share experiences with the group and learn from them, as is the case at comdirect bank where people come together to work on the organisation.

Ordering books/ book club: A budget for books is set up and a book club founded in the sense of a specialist literature circle in the company. Uzin Utz has also introduced an EBIT plus, in which topics such as collaboration and knowledge enhancement ("I'm reading a book") are also tracked.

Lessons Learned: Collection, discussion and documentation of findings, new knowledge and experiences that arise in the course of working on a project.

Send employees for training or wait for their suggestions? A question with no easy answer. Undertaken against the employee's will, it rarely leads to success. But something can be done about the approval process for formal training. The first companies are already demonstrating that this must not (always) go through the supervisor.

CASES IN POINT

Networked further education platforms: At comspace, the procedure for approving further education is digitalised. The focus is on the transfer of knowledge. Employees submit their application on a platform accessible to all. Before doing so, they agree in their respective teams whether the further training course is suitable in terms of time and content. Time means ensuring that sufficient capacities are available and that no time-consuming project phases are standing in the way. Content means whether the further training course will be of benefit to the employee and the team. Two weeks after posting the training application on the platform, it is approved. Moreover, before the further education course begins, discussions take place as to how the knowledge transfer will be organised afterwards.

Non-purpose training budget: Employees or teams themselves decide on individual training. The only requirement is that the need for training fits into the context of the company or the work. Furthermore, costs incurred are booked in the central expenditure and not in individual teams, because further education benefits the entire company (Pickert & Partner).

Decisions are made at the DTD according to the triple approval principle: Employees who wish to take further training need two advocates from among their colleagues in order to gain approval for further training.

Integrating External Partner Networks

External partner networks help companies learn about current trends and technological developments outside their own industry, especially when the major players are located on the other side of the Atlantic. In exchanges with companies from other sectors, information on current topics, developments and trends is gained which can also be useful for their own business.

At the same time, a company's own problems can be addressed, analysed and solved in a larger circle of experience and impact, through an operation that ultimately benefits all those involved.

In numerous interviews, reference was made to joint activities in the context of university research which had proven to be very fruitful.

CASES IN POINT

Companies and institutions in different sectors often face similar problems and challenges. CEWE thus attaches great importance to cooperation and networking with other companies, start-ups and the University of Oldenburg, since a company's ability to learn and develop is limited if it is not prepared to think outside the box. In particular, medium-sized companies like CEWE cannot develop every innovation they need on their own, so outside inspiration is beneficial.

As Uzin Utz does, the Sattlerei für den Pferdesport und Reitsportfachmarkt Tom Büttner (Tom Büttner saddlery for equestrian sports and equestrian specialty store) cooperates closely with university research institutions for networking on matters of current interest, for scientific exchange, and for developing a company-related added value and application case from research prototypes (such as the digital saddle for quality assurance in production).

Making Space for Innovation

The identification and introduction of innovations in a company can be done by management. Especially when it comes to innovations that affect the workflow, the employees impacted by the changes should be involved in the decision-making – they usually know best themselves at which points there could be friction and how best to solve it. At the same time, it is extremely conducive to acceptance within the group of employees impacted (in individual teams, departments or across the process chain) to turn those people impacted into active players in order to avoid negative ‘grapevine fall-out’ from the very beginning, to calm anxieties and also ensure a high level of assent. For digital refinement of products or identification of new business models, it is also crucial to lever the wealth of experience held by the workforce in order to combine a broad view of the topic with relevant empirical know-how.

How does this work out in practice? Lonely decisions made in the ivory tower of top management? Yes and no. On the one hand, in the smaller companies in our case group many tasks still depend directly on the owner. With short distances and a “manageable” number of employees (up to approx. 100), the owner is certainly more involved in operational processes and thus necessarily much closer to employees and customers. From the personal viewpoints of interviewees in our case group, these owners were without exception decision-makers, movers and shapers who lead the way and set the direction. At the same time, one or two owners would certainly welcome greater employee participation – and not solely because this would lighten the load they carry.

Some companies also deliberately push new formats in order to develop brand new ideas with their employees that go far beyond the continuous improvement seen in day-to-day business. Here are some practical examples:

Innovation awards: Competitions in which the innovations submitted are assessed by a jury and the winners awarded cash or non-cash prizes.

Innovation platforms: A digital space where innovation can be shared and communicated. Employees’ innovations and creative ideas can be evaluated according to various criteria such as feasibility or financial viability and then jointly developed and implemented.

Meet-ups: Exchange with external experts and other companies. Innovations, new impulses and creative solutions are the aim of such networking events.

Bootcamps: Workshops which promote the innovative ability of participants. Within a very short time, usually in one or two days, new ideas and concepts are developed by people working together. Participants have the opportunity to learn from each other as well as from professional coaches.

Innovation days: Events where entrepreneurs, board members, experts and representatives from government, media and business can present their products and business ideas. In exchanges of experiences, lectures and presentations, visitors can learn about emerging trends and gain inspiration from new ideas and technologies.

Yet even if larger companies have created appropriate structures and openings for systematic participation, the question still remains as to whether employees actually take advantage of them. The answer is the same for all companies: some of them do, some of them do not.

Conclusions

The study “Success Factors for Business Digitalisation” gives us fascinating insights into the ways digital transformation is shaped in a corporate context. Some of the 15 German companies differ markedly – in terms of their industry sector, size, and corporate culture – but what they all have in common is that they all have made a full commitment to digital transformation, have advanced with it and have gained a wealth of experience along the way. In discussions with the companies, the roll-out process of digital transformation was examined in detail and on the basis of the six fields of action: technology roll-out, business model, work organisation, skills development and learning, leadership and work culture.

Identified Success Factors

A number of success factors can be identified from the quantitative data collected and the personal exchanges with the companies which contribute to successful implementation of digital transformation in the company – regardless of its respective business model and company specifics.

- The initial impetus for digital transformation comes either from the outside, impelled by rapidly changing customer needs and market or environmental developments, which in some cases might even endanger the survival of the company. Or an internal, silent revolution is carried out by employees with a passion for technology who like to try out new things and experiment with novel technologies and working methods. Such readiness to try things out has proven to be an important support factor, not only in the start-out phase, but also in the further shaping and embedding of digital transformation.
- Without the support and involvement of management, however, even the greatest pressure from without or within will not serve to get the company moving. As the most effective driver of digitisation, it is the top management level – whether this be the executive board, managing director or company owners themselves – that sets the needed course and defines the roadmap that serves to guide the whole company on the road to digital transformation.

- However, this does not mean that employees do not play a key role in digital transformation. On the contrary: involvement of employees and joint development of innovative solutions are very much on the rise. This takes different forms within companies that can range from ideas competitions and grassroots initiatives to staff units and innovation labs. Collaboration with external partners (e.g. with start-ups, company networks and university institutions) is also crucial for digital transformation and serves to improve innovation capability.
- At the time of the interviews most of the companies had already completed the first wave of digitalisation, which takes place on the level of technology allocation and transition from analogue to digital. They were then facing the challenges that the second wave of digitalisation brings with it. This second digitalisation phase deals with flexibilisation and optimisation of internal workflows, and ultimately with the development of new business models, and goes hand in hand with a profound organisational and cultural change.
- The understanding of leadership is also changing towards a new image of the manager as a coach and enabler for the employees. In cross-departmental, cross-functional teams, traditional management tasks are broken down and apportioned into newly created roles. Some companies even go so far as to abolish the middle management level altogether. Many companies are experimenting with new forms of decision-making and organisation that create a decentralisation of responsibility and enable a new dimension of transparency and participation.
- To drive these far-reaching changes in the company, what is needed is a great deal of transparent communication in the sense of dialogue and mutual exchange, a distinct culture of error toleration, and a willingness to learn from both positive and negative experiences.
- Apart from the factors promoting digital transformation, there are also a number of impediments that nurture dissatisfaction with the digitalisation process among people. These include:
 - lack of material and human resources,
 - lack of the cultural and persuasion work needed to accompany change
 - and the speed and complexity of digital transformation.
- Despite such challenges and difficulties, the level of satisfaction among the companies surveyed with implementation of digital transformation across all six fields of action tends overall to be positive. Even so, the road taken by the companies through the opportunities and challenges of digital transformation is far from being travelled. For the future, the imperative “Dare to take on the new and lifelong learning” – whether through new opportunities for networking and cooperation within the company or through opening up to external influences, through new forms of learning within the company or through creating space for innovation – still remains the most vital guiding principle.

In Relation to the Working Hypotheses

With reference to the working hypotheses formulated at the beginning (see chapter on the Business Challenge of Digital Transformation, State of Research and Formulation of Hypotheses), the results can be briefly summarised as follows:

1. Corporate culture is a central enabler of digital transformation

✓ Yes

- a. Company values and ideas regarding the use of technology are positive and bound up with success.
-> Driver for change
- b. The nucleus of change lies in the actions of individuals.
-> The role of management
- c. The experiences of change to date and their positive (negative) outcomes have a positive (negative) effect on the implementation of further change processes.
Indirectly confirmed: It is difficult to put the topic in a context that is comparable across all companies.

2. Available resources and approaches to solutions differ from company to company:

✓ Yes

- a. Large companies are leading the way, as they have more resources at their disposal ...
Yes: Large companies in principle have the possibility of trying out more ways, for instance, buying a start-up (see chapter Step 2: How will digital transformation be driven forward?) or creating their own organisational units.

... and thus accelerating the transformation process.
... and **no:** Because reshaping the whole organisation takes much longer (see chapter Step 4: What promotes and what hinders digital transformation?). Small companies take a more targeted approach and achieve change more quickly.
- b. Transformation in individual sectors has progressed at different rates.
Without external pressure, there can be no change.
-> Drivers for change

Possible
but not
necessary

3. Digitalisation is changing the way companies are organised:

- a. Flexible work is a gateway to digitalisation and is seen as an early form of transformation.
 - > Flexibility in places and times of work
 - > Between flexibility and a culture of presence
 - b. Digitalisation introduces new ways of working ...
 - > Forms of decision-making and organisation in the digital age

... workflows, processes and products are reshaped.

No! Not yet.

 - > Digitalisation in front of and behind the curtain
-

✓ Yes, but
it is not
going to
get any
easier...

4. Classic, mature organisational structures hinder the road to digitalisation through winding decision-making and information paths.

- > Cooperation in matrix organisations
- a. Digitalisation and the introduction of new working methods often go hand in hand with the dismantling of hierarchies.
 - > Forms of decision-making and organisation in the digital age
- b. Leadership through information advantage and the power of hierarchy is less and less accepted by employees and lived out by managers, so that management's claim to power is more strongly legitimised by identification and expertise.
 - > New roles are created – or old ones redefined
 - > Change of the management role

Structure of the Survey

Research Structure and Circle of Participants

A mix of methods was used for data collection, including qualitative one-on-one interviews and the Digital Pathguide quantitative, online-based assessment tool developed by the Bertelsmann Stiftung. 14 men and 6 women from the management of 15 different companies were interviewed using both methods. Interviewees were between 30 and 60 years of age, the participating companies have a workforce of between 18 and 16,500 employees. They also have a company history of at least 10 years with mature structures that need to be changed. They are private companies and come from broadly diversified economic sectors with a view to covering a variety of industries. The survey commenced on 10 May 2019 and concluded on 12 March 2020. Survey results were rounded up or down to give a sum of 100 percent.

Thumbnails of Companies Surveyed

CEWE Foundation & Co KGaA

Head office: Meerweg 30-32, 26133 Oldenburg

Sector: Photofinishing

No. of employees: 4,000

Founded: 1961

Contact: Dr Reiner Fageth, Christian Stamerjohanns

Further information: <https://company.cewe.de/de/ueber-uns.html>

What does digital transformation mean for CEWE?

Digitalisation is customer-centric at CEWE and first and foremost always concerns products going directly to the customer. We have already radically and successfully completed the transition from analogue to digital photography, but our digital transformation is far from over. Transformation is now taking the form of transition from desktop to smartphone for which our Innovation Lab is developing new technologies. For the future course of

our company, we encourage all our employees to be innovative and participate in a variety of formats.

comdirect bank AG

Head office: Pascallehre 15, 25451 Quickborn

Industry: Financial service provider

No. of employees: 1,278

Founded: 1994

Contact: Annette Siragusano

Further information: <https://www.comdirect.de/>

What does digital transformation mean for comdirect bank?

comdirect bank's DNA has always been digital – so why are we talking about digital transformation? For us, digital transformation means a consistent focus on the customer with novel digital, hybrid and personal solutions, a high level of digital expertise and cross-functional, agile working methods that enable us to offer bespoke, quick time-to-market solutions, and to meet changing customer needs.

comspace GmbH & Co KG

Head office: Elsa-Brändström-Straße 2-4, 33602 Bielefeld

Sector: Information technology

No. of employees: 107

Founded: 2002

Contact: Andreas Kämmer, Peter Schmidt

Further information: <https://www.comspace.de/de>

What does digital transformation mean for comspace?

Digital transformation is the core of our business model. We are creators and drivers of digitalisation. Constant change is part and parcel of our culture and work.

Deutsche Kreditbank AG

Head office: Taubenstraße 7-9, 10117 Berlin

Sector: Credit institute

No. of employees: 3,990

Founded: 1990

Contact: Christian Liedtke, Stefan Fuerst

Further information: https://www.dkb.de/ueber_uns/

What does digital transformation mean for DKB?

DKB also sees digital transformation as an ongoing process of change based on digital technologies. It leads to changes in organisational structure, and forms of cooperation and management as well as in work processes and working methods. New digital technologies and changed social and economic parameters are also reflected in new customer expectations which

require economically viable and highly flexible business models and services.

Deutscher Technologiedienst GmbH (DTD)

Head office: Schaezlerstr. 6, 86150 Augsburg

Sector: Technology-oriented management consultancy

No. of employees: 18

Founded: 2003

Contact: Dr Markus Mann

Further information: www.dtdienst.de

What does digital transformation mean for DTD?

It means transposition of consulting results to special platforms, digitally generated according to customer specifications. In other words: a move away from the printed consulting report towards an interactive communication, project and information platform (ICIP).

Manufactum GmbH

Head office: Hiberniastrasse 5, 45731 Waltrop

Sector: Multichannel retail

No. of employees: 550

Founded: 1987

Contact: Max Heimann

Further information: www.manufactum.de

What does digital transformation mean for Manufactum?

That the customer is more central to strategy than ever before – delight in our customers also manifests itself in the expansion of our digital distribution channels.

Maschinenfabrik Reinhausen GmbH

Head office: Falkensteinstraße 8, 93059 Regensburg

Sector: Power engineering

No. of employees: 3,550

Founded: 1988

Contact: Johann Hofmann

Further information: www.ValueFacturing.com

What does digital transformation mean for Maschinenfabrik Reinhausen?

Our vision is to make intelligent networking of production data a new industry standard in discrete production, and, with a blend of software and consulting, to meet our customers' needs with the latest technological standards.

Otto GmbH & Co. KG

Head office: Werner-Otto-Straße 1-7, 22179 Hamburg

Sector: Online trade

No. of employees: 5,892

Founded: 1949

Contact: Susanne Heinrichs, Tobias Krüger

Further information: <https://www.otto.com>

What does digital transformation mean for the Otto Group?

Digital transformation has changed both our business models and the way we work within the Group and with our customers and partners. It is an all-encompassing process of change that is not only transforming technology but also changing the way we behave and think. What is important for the Otto Group is that the fundamental values of our company such as humanity and sustainability continue to be lived out – these values are more important than ever in the transformation process.

Pflegezentrum Haack-Yol e. K.

Head office: Buerschestr. 159, 45964 Gladbeck

Sector: Nursing care services

No. of employees: 92

Founded: 1994

Contact: Hülya Haack-Yol, Marina Talaga

Further information: <https://pflegezentrum-haack-yol.de/>

What does digital transformation mean for the Pflegezentrum Haack-Yol?

For us, digitalisation means the conversion of operational processes in combination with the appropriate further training of employees.

Pickert & Partner GmbH

Head office: Händelstraße 10, 76327 Pfinztal

Sector: Software for MES, CAQ and Traceability

No. of employees: 40

Founded: 1981

Contact: Sven O. Rimmelspacher

Further information: www.pickert.de

What does digital transformation mean for Pickert & Partner?

It means supporting employees in their work and enabling good and successful cooperation through process optimisation in the form of digital systems and by using the tools for collaboration.

R+V Versicherung AG

Head office: Raiffeisenplatz 1, 65189 Wiesbaden

Sector: Insurance

No. of employees: 16,529

Founded: 1922

Contact: André Dörfler

Further information: <http://www.ruv.de>

What does digital transformation mean for R+V Versicherung?

Digitisation will help us maintain our future viability by facing up to change and driving forward digital transformation of our successful business model across the entire value chain in a consistent and measured manner.

Sattlerei für den Pferdesport und Reitsportfachmarkt Tom Büttner e. K.

Head office: Kesseldorfer Str. 212, 01169 Dresden

Sector: Handicrafts: saddlery for equestrian sports and equestrian speciality stores

No. of employees: 22

Founded: 1996

Contact: Tom Büttner

Further information: <https://tom-buettner.de/>

What does digital transformation mean for the Sattlerei für den Pferdesport und Reitsportfachmarkt Tom Büttner e. K.?

As a crafts business, digitalisation was an amazing opportunity for us to open up new markets. Use of 3D technology enables us to handle our business processes faster and in greater quantity, while also expanding our position as sought-after specialists.

Siegwerk Druckfarben AG & Co KGaA

Head office: Alfred-Keller-Strasse 55, 53721 Siegburg

Sector: Manufacturer of printing inks

No. of employees: 5,051

Founded: 1930

Contact: Stephanie Schmitz

Further information: www.siegwerk.com

What does digital transformation mean for Siegwerk Druckfarben?

Siegwerk aims to transform the company into a specialist for circular and digital packaging solutions by the year 2025. To this end, the Circular Economy Hub was established and Siegwerk Ventures was founded from the old Digital Unit. Based in Cologne, this subsidiary is dedicated to creating a novel business model for Siegwerk's digital and circular economy solutions.

For Siegwirk, the digital transformation also covers creation of a web tool (customer portal) where customers can order our inks online. Naturally, Siegwirk also puts digital transformation with regard to our employees very much at centre stage: daily work with Office 365 together with digital collaboration in teams support this.

Uzin Utz AG

Head office: Dieselstraße 3, 89079 Ulm

Sector: Chemicals

No. of employees: 1,350

Founded: 1911

Contact: Dr Florian Neymeyer

Further information: <https://de.uzin-utz.com/>

What does digital transformation mean for Uzin Utz?

At Uzin Utz, digitalisation stands for continuous, evolutionary development which ensures the future viability of the Uzin Utz Group. It aims at optimising both internal and external processes, increasing efficiency and enhancing customer satisfaction. For our employees, digitalisation means easier work.

Xella International GmbH

Head office: Düsseldorfer Landstraße 395, 47259 Duisburg

Sector: Production and distribution of building and insulation materials

No. of employees: 7,290

Founded: 1972

Contact: Dr Alexander Brunst, Verena Leurs

Further information: www.xella.com

What does digital transformation mean for Xella International?

Our vision is to actively and efficiently shape the future of the construction industry for our customers, business partners and employees by using state-of-the-art technologies. In this way we can build on partnerships that are reliable, profitable and sustainable.

Directories

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Links

- Blog "Zukunft der Arbeit" by Bertelsmann Stiftung: <https://www.zukunft-derarbeit.de/category/digitale-transformation/>
- Blog "Arbeiten in der Corona-Krise – und wie es im New Normal weitergehen kann" by Fraunhofer Institute for Industrial Engineering IAO: <https://blog.iao.fraunhofer.de/arbeiten-in-der-coronakrise-und-wie-es-im-new-normal-weitergehen-kann/>
- Link to Digital Pathguide: www.digitalpathguide.de

You can also follow us on Twitter:

@olewin
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 @arbeitXpunkt0

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Abstract

The present study systematically collects experiences made by a variety of companies (number of cases: $n = 15$ companies) and sectors in the shaping of digital transformation. The results are intended to provide answers as to how the process of digital transformation can be successfully shaped in the company, which kind of motivation typically triggers it, and which factors can be extrapolated for a successful outcome, factors that are independent of the respective business model and transferable to other companies.

Using a blend of qualitative, in-depth interviews and quantitative data collection in the form of an online survey (the Digital Pathguide of the Bertelsmann Stiftung), the first theory testing tendencies are identified.

To this end, a vade mecum has been compiled with which managers and decision-makers in the companies can analyse their own activities and, on the basis of concrete examples, gather specific proposals and ideas for the way ahead.

The Project Team



From left to right: Dr Ole Wintermann (Bertelsmann Stiftung), Claudia Ricci (Fraunhofer IAO), Anke Hoffmann (Bertelsmann Stiftung), Birgit Wintermann (Bertelsmann Stiftung), Robert Hägelen (Otto Group), Valerie Wienken (Fraunhofer IAO), Richard Schwarz (Fraunhofer IAO). Not in the photo: Birgit Riess (Bertelsmann Stiftung), Dr Josephine Hofmann (Fraunhofer IAO)

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DOI 10.11586/2021055

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April 2021

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