



► The Quality Organization of the Future

Impulses for a Sustainable Design of Quality Management

Management Summary

The opportunities digitalization offers are insufficiently exploited in quality management. This is a central finding in a recent survey by Porsche Consulting among managers responsible for quality management (QM) in large German companies. The study determines the current status of quality organizations on their way to "Quality Management 4.0" and identifies areas for action. It also considers different organizational design levels and pinpoints suitable approaches for their development. The results reveal the five core elements of a sustainable quality organization and the prerequisites for putting them into practice. These include the further development of QM instruments with regard to prevention and prediction, the use of flexible and agile working methods, the central anchoring of quality in the company's overall strategy, and a reorganization of QM tasks.



Motivation



There is a lack of **practical points of reference** on how quality management should be structured in the course of the digital revolution



Study



The focus areas are drivers of **change in quality management**, affected **organisational aspects** and a tangible **picture of the future**



Cognition



Five key drivers for sustainable quality management were identified for the design levels considered

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Figure 1. Summary of the study

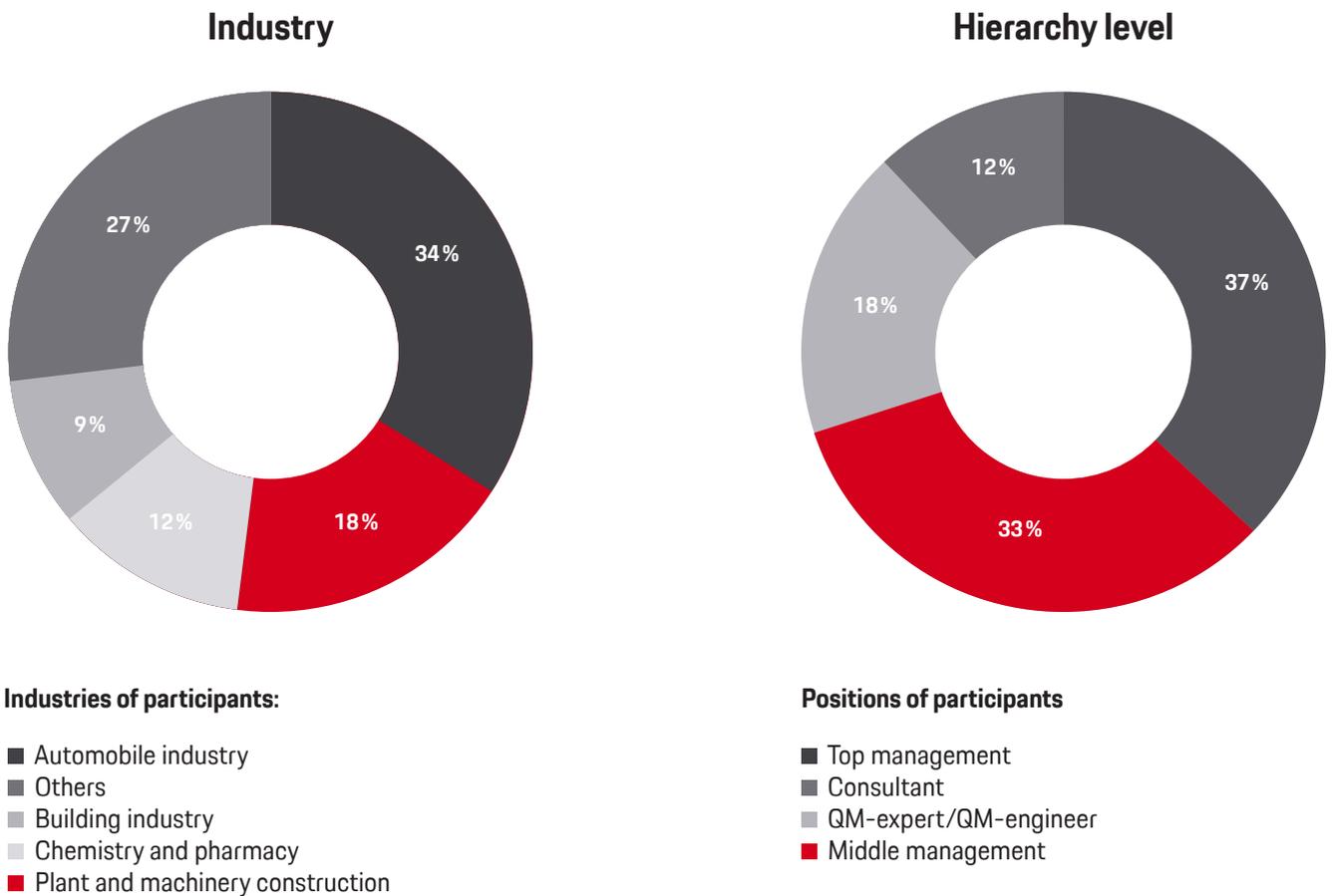
OTHER KEY FINDINGS ARE SUMMARIZED BELOW:

- Digital innovations can only exploit the full potential of new technologies in connected applications and as a linking element in the value chain.
- Processes must be implemented as continuous procedures to enable information flow across divisions.
- The combination of established QM techniques and innovative methods of quality data collection and evaluation to form a digital, data-based portfolio of methods results in a far-reaching, preventive, and predictive QM.
- Employees in quality management are currently experiencing a transformation in their function within the company. In the future, they will have to act as both technical experts in quality functions and generalists in interface functions.
- Flexible, agile working methods will support QM employees in achieving their goals.
- Quality-oriented corporate culture requires visible leadership and put quality at the core of the overall strategy.
- Central quality-related coordination tasks are grouped together in staff units, while the operational implementation of quality-related tasks is carried out decentrally in specialist departments in increasingly digital areas with new working methods.

1. Introduction

Quality is and will remain one of the most important drivers of a company's competitive strength and is therefore crucial to its success. Driven by mega trends, quality management is under pressure to change. The function of quality must be reevaluated in the context of digitalization, networking and increasing complexity. This study highlights the most important action fields on the path to quality leadership and provides a guideline that can serve as a compass for designing sustainable quality organizations.

The study covers a wide range of industries and summarizes the assessment of participants from different functions: 34 specialists and managers from QM departments of large German companies in various sectors were surveyed.

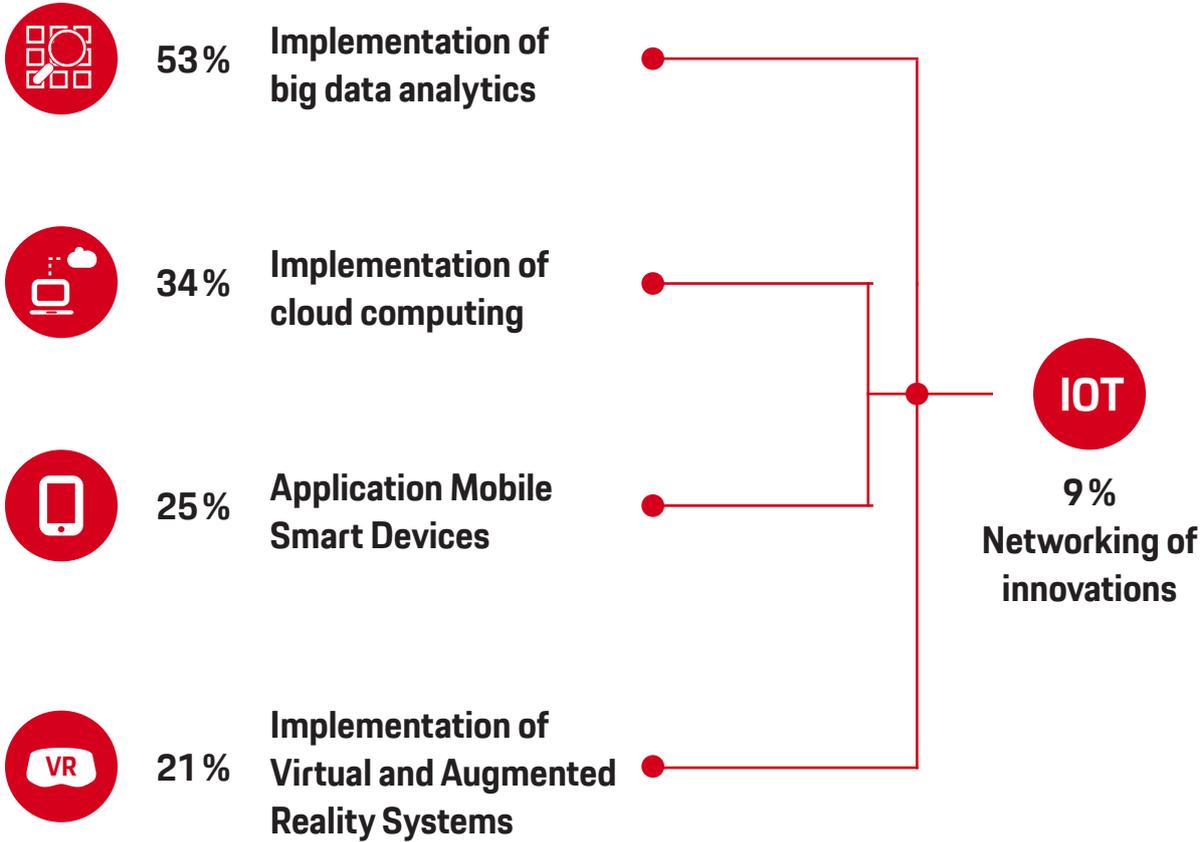


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Figure 2. Composition of study participants

A key result: compared to other corporate functions, QM has shown a relatively low affinity for digital innovation. One in five quality departments does not use any digital innovations at all, and only about one in ten links digital innovations in order to use them in a network (often as a cyber-physical system) in

quality management. All too often, this represents a missed opportunity to develop a Q-IT infrastructure that would automatically link processes with data and analyses and thus enable far-reaching, preventive quality control.



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Figure 3. Application of digital innovations among the study participants

The survey examines challenges and changes in the use of digital innovations and also derives central action fields for the design of sustainable quality organizations. The design levels of the quality organization considered in this context include the process level, the QM-method portfolio, the qualification level with regard to tasks, competencies and responsibilities as well as the corporate culture and the organizational structure.

The first step of the study analyzed the most important digital innovations that have strongly influenced quality organizations. This illustrated the digital innovations that are key to the successful completion of the digital transformation. Central opportunities and obstacles were identified by querying the resulting impulses and difficulties that have arisen.

2. Five key drivers of a sustainable quality organization

An overview of possible actions to implement a quality-oriented digitalization agenda was derived from the survey results. This took into account all organizational levels and provided specific guidelines for action. The five key drivers of a sustainable quality organization are shown in figure 4.



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Figure 4. Characteristics of a sustainable quality organization

2.1 Process control across all stages of the value chain

In addition to the existing technical infrastructure, an actual continuous flow of information must be established across processes and working steps. Two out of three study respondents confirmed that digitalization made it necessary to reorganize the process map. Changes due to digital innovation are triggered by a new dimension of data availability. Processes can be planned and controlled with a broader information base and generate valuable output data through high-precision analytics tools. These results represent de-

cision variables for subsequent process steps and can thus enhance the quality of the decision-making process.

A majority of survey participants confirmed the process-related links to upstream and downstream value-adding stages and the emergence of new process interfaces. Nevertheless, a lack of process transparency and of consistency in interface implementation were named as deficits in the implementation of an integrated process management.

Results of the study

- ▶ **92 %** Reorganization of processes necessary
- ▶ **89 %** Change in **input and output variables**
- ▶ **86 %** Implementation of new **interfaces** required

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Figure 5. Changes at the process level

RECOMMENDATION FOR ACTION

In order to implement IT and organizational networking consistently at a process level, organizations need global process control. Upstream and downstream stages of the value chain must be linked in a consistent concept with uniform standards, incorporating external interfaces into the process.

The goal is a fully linked process organization with clearly defined data and activity interfaces for all areas involved. Finally, the connection of all those involved in the process enables the organization to operate quality management in a truly interdisciplinary manner. This is a basic prerequisite for a sustainable preventive quality management, because errors can often only be detected and solved across disciplines.

2.2 Digital integrated-method cockpit

QM methods form the toolbox of the quality organization and are essential to monitor processes with regards to quality objectives so that deviations can be analyzed and eliminated. Through digital innovations, these tools experience two impulses for change. Firstly, established QM methods can now be implemented in a completely digital, process-integrated, and automated way. One example of this is an integrated software for Failure Mode and Effects Analysis (FMEA), which provides and processes information automatically and makes it available to the relevant parties. Secondly, there are new QM methods that have emerged from the digital transformation in quality management. In particular, the area of predictive process monitoring and control supported by artificial intelligence should be mentioned here.

Nearly every second respondent is convinced that existing QM methods are being further developed through digitalization and will continue to be indispensable. More than 90 percent of survey participants also confirmed the expectation that new instruments will be developed to ensure high quality in a sustainable and resource-efficient manner. However, the prevailing uncertainty about the concrete nature of new QM methods and their integration into existing toolboxes currently poses challenges for quality organizations and often makes those responsible hesitant to act.

Results of the study

- ▶ **94 %** **New QM methods** necessary
- ▶ **91 %** **Further development** of the **QM methods** required
- ▶ **45 %** **Established QM methods** still significant

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Figure 6. Changes in QM methods

RECOMMENDATION FOR ACTION

The selection and suitable combination of QM methods and tools for the individual organization is more important than the exhaustion of the maximum technically possible. The first step is to examine the established toolbox in terms of its future suitability and digitalization potential. The skills of employees as well as the characteristics of the organization must also be taken into account. Hence, it is usually advisable to first convert the process and organizational structure before introducing new tools. In this way, excessive demands and duplication of effort can be avoided.

Another decisive factor is the objective of introducing new tools or updating established ones. If, for example, there are concrete problems in the data flow between the parties involved, this can often be improved by a digitalized workflow with optimized interfaces. If, on the other hand, the focus is on resource efficiency, digital innovations, especially in form of new simulation techniques, can replace physical validation processes and thus save costs and time.

It is crucial that the experience and suggestions of users be incorporated in the quality toolbox's further development. If necessary, simple in-house developments can circumvent cost-intensive external solutions or bridge the gap until there is greater certainty regarding the investment decision.

The following also applies to the field of quality tools: digitalization cannot be an end in itself but must be associated with measurable added value for customers and/or the organization.

2.3 Quality managers as multi-versatilists¹

Digitalization and new, agile forms of working are changing the work environment for many employees in quality management. Every second participant in the survey confirmed that employees are currently supported by digital innovations. Two-thirds of the organizations already offer training opportunities for employees with regard to digitalization. However, more than half of respondents have not yet employed experts for digital work content. Three-quarters of respondents cited

a lack of IT competence as a major obstacle for applying digital innovations. Even more serious was the lack of qualifications with regard to new work content, in particular the increased cooperation with adjacent divisions and the management of the associated interfaces.

Results of the study

- ▶ **84 %** **Insufficient qualification** for new work content
- ▶ **75 %** **Lack of IT competence** in quality management
- ▶ **20 %** **No digitisation experts** in quality management

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Figure 7. Changes in employee qualification

RECOMMENDATION FOR ACTION

The starting position described above gives rise to two main areas for action:

First, it should be ensured that employees have the necessary skills to work effectively in a networked quality function. Depending on the area of application, this may require in-depth knowledge of related disciplines (e.g., development,

software, compliance), communication skills, organizational talent, and assertiveness. The mastery of relevant quality techniques is now just another requirement.

Second, the necessary expertise regarding a digital innovation's potential must be created within the quality organization. The experts must understand the quality-related

¹ Versatile people are specialists in a particular discipline and can simultaneously take on other roles.

day-to-day business, be aware of available technologies, and above all, accurately assess a potential innovation's feasibility in the organization. This is the only way to identify opportunities and develop suitable solutions together with those responsible for the function.

Not every employee or expert needs to cover the entire range of requirements. However, the entire quality organization must cover every area to an adequate extent, in the sense of an interlinked community. A close exchange in the quality organization and with external initiators is an important prerequisite. Successful versatilists in quality management will therefore be networkers and interface managers.

2.4 Quality at the core of corporate culture

Quality is often perceived exclusively as the sum of certain features of work results. Quality aspects, such as innovation and transformation, that are aimed at creating value are lost in this view. Only every fourth study participant confirmed that digital innovations are anchored in the quality strategy. In one-fifth of the companies surveyed, the transformation of quality management is not supported by an adapted management style.

Neglecting to develop a quality organization can lead to staff reluctance to embrace change. Under these circumstances, quality management may be left out of cross-functional digitalization projects. At the same time, however, almost half of respondents can already use new, more flexible work concepts in quality management, due, at least in part, to digital innovation. New solutions also improve cross-functional cooperation—the key to effective QM.

Results of the study

- ▶ **54%** **New working concepts** possible
- ▶ **53%** **Lack of specifications** from the management level
- ▶ **48%** **Lack of acceptance** in the quality organisation

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Figure 8. Changes in corporate culture

RECOMMENDATION FOR ACTION

Quality should be anchored as a visible component in the strategy and, in the sense of holistic QM, include both the product and the organization of the value-added process. Digital transformation initiatives must also take the quality organization into account, ideally right from the start. Managers play key roles as initiators and drivers of change.

The danger of using trendy catchphrases in the strategy paper must be countered at an early stage by initiating lighthouse projects. This will communicate added value and practical benefits as well as increase employee motivation and acceptance of digital innovations in quality management. Achieving

short-term goals can help overcome any existing investment barriers.

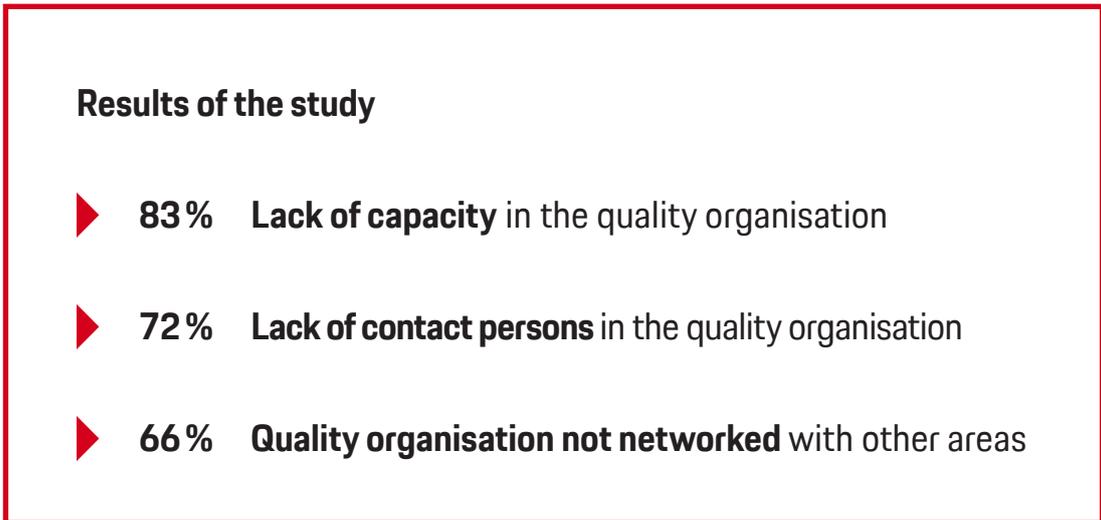
In addition, employee motivation can be heightened by the introduction of new forms of working, such as agile methods and flexible hours, making the practical benefits of a modified organization tangible for every employee. A central component of cultural change is the promotion of individual initiatives and company-wide knowledge transfer. After all, the successful transformation to a quality organization requires more than an organization's technical competence—it calls for an adjustment in staff attitude toward work.

2.5 Developing an ambidextrous quality organization

In many organizations, digitalization leads to a redistribution of roles, which is reflected in altered process and organizational structures. In this context, quality management should also re-define its range of tasks and relevant interfaces and check its integration in the overall organization.

Only a third of experts surveyed observed such changes in the organizational structure. More than one-third also stated that no new functional positions had been established in the overall organization or in quality management. Nevertheless, some

decision paths were redefined. The majority of survey participants criticized the quality organization's networking, which was perceived as too weak. As a result, quality management often lacks suitable contact persons for nonscientific questions and new work content. In addition, more than 80 percent rated the organization's capacity as too low to cope with the planned digital change.



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Figure 9. Changes in the organizational structure

RECOMMENDATION FOR ACTION

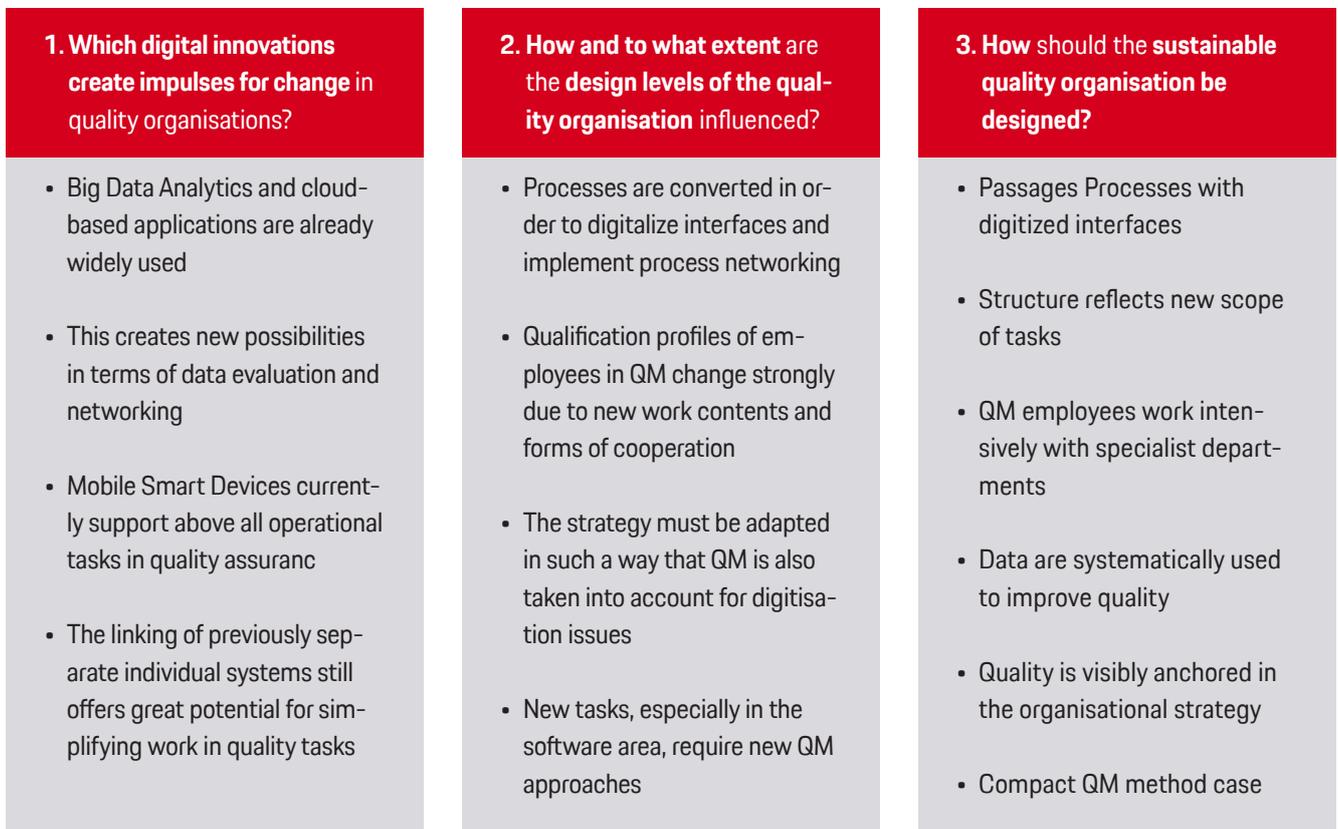
From an organizational point of view, there are two main areas for developing quality organizations: On the one hand, it is necessary to ensure networking with the necessary expertise within and outside the organization—in particular, know-how in digital innovations, including their legal considerations. This can be achieved by both specifically including quality representatives in relevant internal committees and participating in external working groups or events. Employees in quality management must network more closely than in the past so that questions can be answered more quickly on a personal level.

On the other hand, the principle of central coordination and decentralized responsibility for tasks still applies. In the future, it will be important to decentralize quality-related tasks in agile working methods. This aspect must be taken into account when setting up an “ambidextrous” quality organization in which comprehensive quality tasks are planned and controlled centrally, but quality is operationally assured in a decentralized, digitalized working environment. A particular challenge here is the matter of software quality, for which separate functions with adequate capacity should be created if necessary.

3. Summary and outlook

Managers in quality management are currently guided by three essential questions. The most important answers derived from the survey results are summarized in figure 10. Times of change call for a holistic approach that will successfully develop a quality organization. This approach ideally addresses all areas for action presented in this paper. With regard to limited resources, however, organizations must decide for themselves which areas must be developed to achieve their strategic goals. Many factors remain unclear, such as far-reaching or-

ganizational changes and investment decisions. At the same time, there is already a wide range of applications available for digital innovations in quality management: big data, cloud computing, mobile smart devices, the Internet of Things, and virtual reality are a few that offer immense potential for quality improvement in all kinds of organizations. Despite the drive to effect rapid change, decision-makers should proceed according to plan and collaborate with their employees on determining the ideal development path.



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Figure 10. Summary and outlook

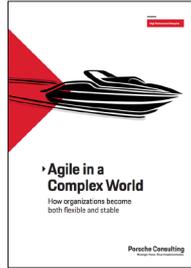
Mehr zum Thema



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