**SIEMENS**

**Siemens Customer Survey | Result Report**

# Digitalization

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# Germany 2014
# Digitalization

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# Foreword

**Prof. Dr. Siegfried Russwurm**

Chief Technology Officer and member of the Managing Board of Siemens AG

## Dear readers,

Change is a basic principle of today's world. It's creating new perspectives for the future, calling into question long-established ideas, inspiring new maxims for action and providing increased momentum for entrepreneurial decision-making.

A brief look at the digital transformation now underway reveals just how much our world has changed in the last few years and just how great today's paradigm shift really is. Up to the year 2000, humanity as a whole had accumulated about two billion gigabytes of data. We currently generate this volume of information in a single day. According to the experts, the global data pool will total 40 zetabytes by 2020 – a fiftyfold increase in only ten years. And that's still just the beginning. Growth in this area is unlimited – not least because the real world is now being mapped more and more in the virtual one.

Siemens was one of the first companies to recognize the opportunities that digitalization offers and to rigorously orient its business activities accordingly. As a global technology company and a world-leader in automation, we're convinced that this megatrend provides a major opportunity to better understand our customers, to better meet their requirements and to drive their development – and ours. Digitalization not only has the potential to create new business opportunities and generate major growth for our company; it can also increase, in particular, the value of our existing portfolio.

It was for these reasons that we conducted this wide-ranging customer survey at the end of 2014. The initial results demonstrate very clearly that digitalization is now a fact of life for our customers. Since it can improve business processes significantly, it's also now a top management priority at companies everywhere. But the survey also demonstrates something else: the solutions that our customers now want are often highly individualized. That means they can only be developed in close partnerships. We take this requirement very seriously. That's why we're further intensifying cooperation with customers and joining forces with them to identify the precise solutions that they need. It's also why we're focusing intensively on new technologies and playing an active role wherever future digital standards are being defined or improved.

Because you can be sure of one thing: Siemens isn't resting on its laurels. We're working together – across all our business fields – to drive the digitalization of our technologies and solutions. That's the only way we can remain successful over the long term and develop trendsetting technologies and business models jointly with our customers. We are – and will remain – active participants in today's digital transformation. On that note, I'd like to encourage you to take a close look at our survey results. I hope you'll find them interesting and stimulating reading.

With best regards,

Prof. Dr. Siegfried Russwurm

# Introduction

Faced with dynamic new business models and competitors in their markets, many industries and companies are currently experiencing major upheavals. Digitalization almost always plays a key role in this scenario. For innovative companies, digitalization technologies and the changes they're bringing about are creating tremendous opportunities.

The financial and business press has increasingly reported on new market players who are challenging major companies or even entire industries with Internet-based business models. The digital transformation is now an indisputable fact of life in every industry. For example, the prototype self-driving vehicle that Google is now building shows that the U.S. company could threaten the business model of one of Germany's top industries: car manufacturing.

Digitalization will be a key factor in the choice of business location in the years ahead. The rapid expansion of broadband networks as well as dynamic advances in data protection and employee training and further education are playing an increasingly important role here.

Siemens is seizing the opportunities offered by the digital transformation by leveraging its company-wide Vision 2020. Against this backdrop, Siemens has conducted Germany's first-ever customer survey on digitalization. Tightly focused on the real value chains of German industries, the survey took place from the fall of 2014 to January 2015. In order to obtain an all-encompassing picture of the challenges customers face, survey participants included both technology- and strategy-oriented decision-makers from companies of all sizes and from all industries. The results illustrate for the first time the complexity of the digital transformation in the day-to-day business arena.

The survey, whose relevance is underscored by the comparison with other German and international studies, provides a comprehensive overview of digitalization as seen by Siemens customers. Participants were from companies of every size and from every industry in which Siemens is active. They were asked who was responsible for digital strategy at their company, what challenges they were facing in the area of digitalization and what requirements they anticipated for the future.

# Key results from Germany (summary)

**01** **A comprehensive customer survey on digitalization in Germany.**

Survey participants comprised a representative sample of nearly 300 decision-makers from companies of all sizes and in all industries across Germany. For the first time, participants were asked who was responsible for digital strategy at their company, what challenges the company was facing in the area of digitalization and what requirements they anticipated for the future.

**02** **While digitalization has become an indispensible part of the business for most German companies, implementation will still be a long road for most of them.**

More than half the companies surveyed recognize the potential of digitalization and have an overarching digital strategy in place, at least in part. However, 43% of the companies have not yet developed a strategy of this kind. The extent to which the companies have established a digital setup is relatively independent of company size: 49% of the small and medium-sized companies surveyed have also developed a digital strategy.

**03** **Digitalization is primarily viewed as a vehicle for improving processes and efficiency. Survey participants are also anticipating new business models.**

Participants from large companies as well as those from small and medium-sized companies have similar views: all saw digitalization primarily as entailing data management, the transition from analog to digital processes and the creation of networks. They expected these developments to result, above all, in enhanced quality, service and resource efficiency. Every second company was already leveraging digitalization to develop new business models.

# Key results from Germany (summary)

**04** **The primary barriers to the further implementation of digitalization are a lack of standardization, a lack of cost-benefit analyses and concerns about data security.**

Nearly 50% of Siemens' customers believe there are too few technical standards for integrating and networking existing and new systems. In addition, a lack of cost-benefit analyses as well as uncertainties relating to data security issues were among the main barriers to making greater use of digital technologies and processes. For nearly half of those surveyed, the most important point to be addressed when driving digitalization was employee involvement and training/continuing education.

**05** **Responsibility for digitalization is usually centrally anchored.**

For more than half of the customers surveyed, the responsibility for decisions relating to digital strategy was centralized. Responsibility did not necessarily lie with the CIO or CTO. Digitalization was usually a "tone-from-the-top" topic, with senior management or the IT department usually being responsible for digitalization issues.

# Survey results

The questions cover a wide range of issues relating to digitalization and its outstanding importance for the future of the economy.
In conducting the survey, Siemens had two key aims:

The first aim was to find out which aspects of digitalization are most important to survey participants, which digitalization trends they see as particularly important in their business environment and whether they see hurdles and barriers related to increasing digitalization.

The second aim was to find out if the companies surveyed have already developed an overarching digital strategy and where the responsibility for digitalization lies within their company organization.

# Survey of nearly 300 companies from 30 industries

## Position/role of the respondents (N=287 respondents, clustered)

**58%**
Decision-makers

**29%**
Top decision-makers

**13%**
Implementers

As part of the customer survey, Siemens spoke with nearly 300 decision-makers from 30 industries. The survey was conducted between October and December 2014. Slightly more than half the participants work for large companies with over 500 employees, while about 45% work at small and mid-sized companies. The majority of the respondents make decisions as managers in leadership positions, with 29% serving in the top level of management. In addition, the survey also included some people who implement strategies at the operative level.

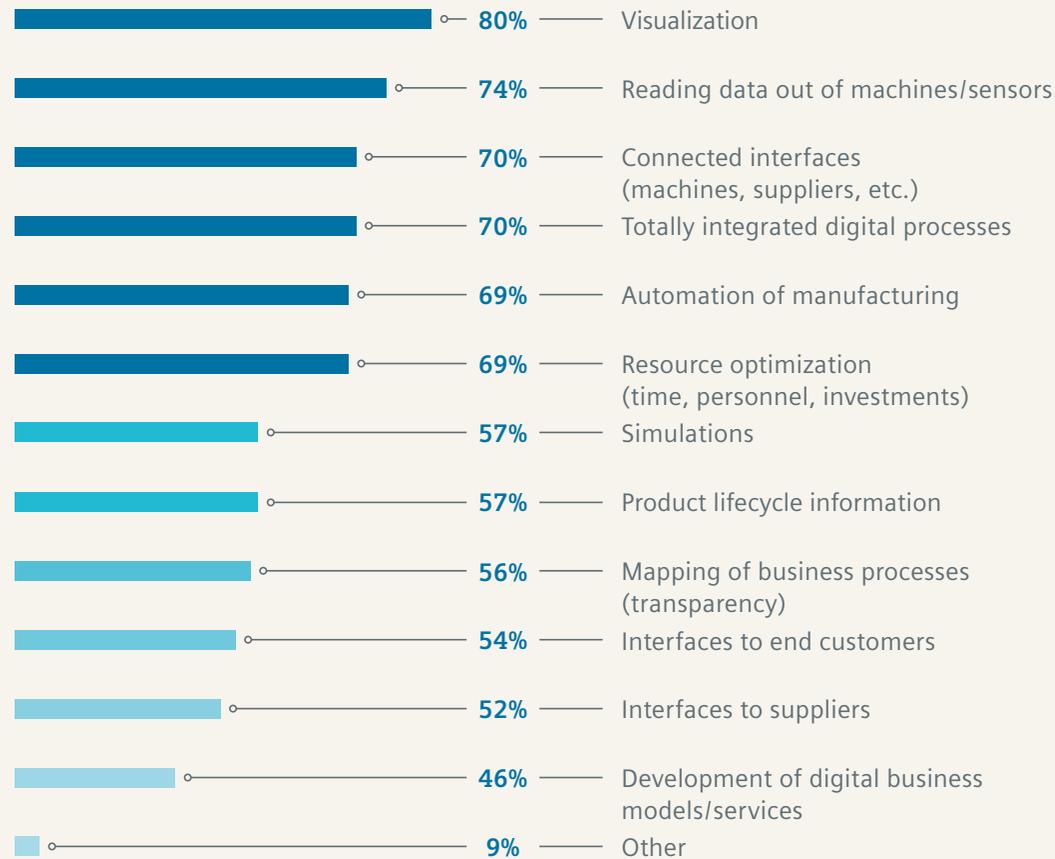## Company size (N=287 respondents)

**151**
Large companies (53%)

**130**
Small and medium-sized businesses (45%)

**6**
No indication (2%)

# The main aspects of digitalization

## How important are the following aspects of digitalization to you?

(N=287 respondents, multiple responses possible)

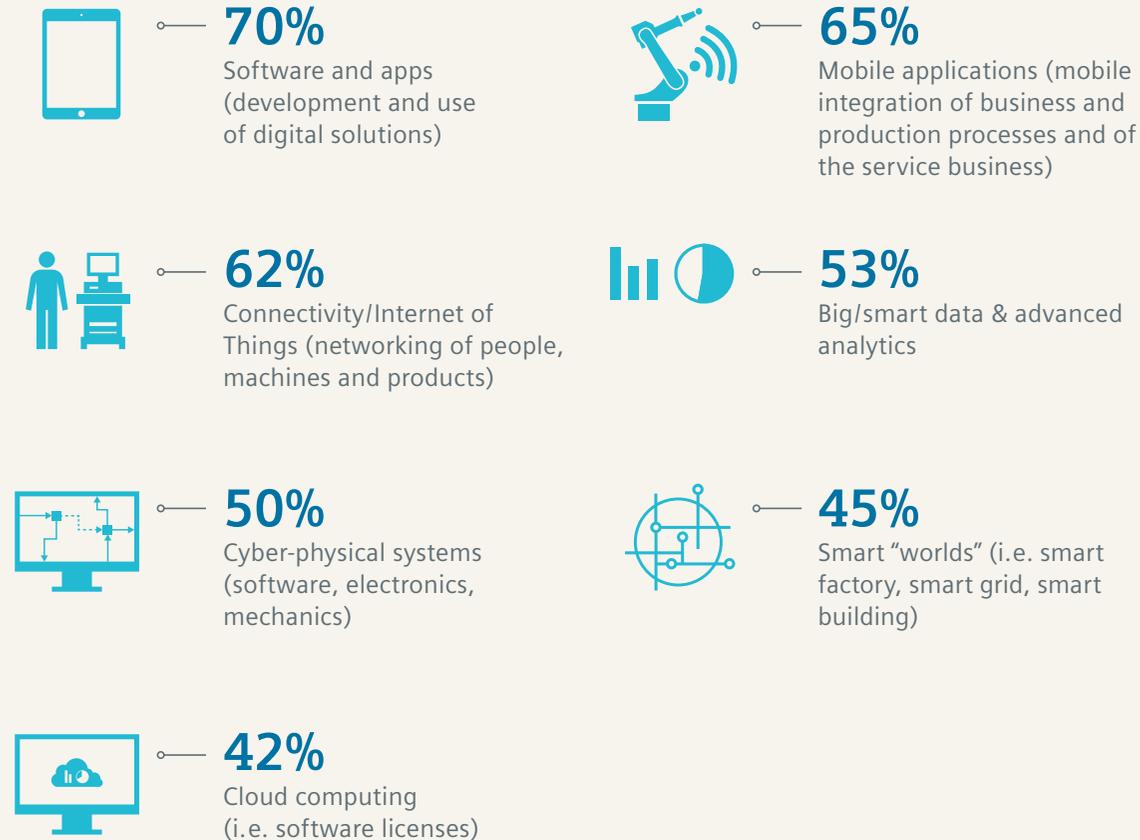| Aspect | Percentage |
| --- | --- |
| Visualization | 80% |
| Reading data out of machines/sensors | 74% |
| Connected interfaces (machines, suppliers, etc.) | 70% |
| Totally integrated digital processes | 70% |
| Automation of manufacturing | 69% |
| Resource optimization (time, personnel, investments) | 69% |
| Simulations | 57% |
| Product lifecycle information | 57% |
| Mapping of business processes (transparency) | 56% |
| Interfaces to end customers | 54% |
| Interfaces to suppliers | 52% |
| Development of digital business models/services | 46% |
| Other | 9% |

Assessed as belonging to one of the two top categories: "currently very important" or "currently important"

It's very clear which aspects of digitalization are currently important for the companies surveyed. Here, 80% of the respondents cited visualization of complex processes and 74% the processing of machine and sensor data. In each case, roughly seven out of ten participants considered ensuring fully integrated processes, implementing connecting interfaces, further automating manufacturing, and making the best possible use of resources to be among the main aspects of digitalization.

In addition, the respondents were asked to describe in their own words what digitalization means to them. The result: the surveyed companies hold a broad range of views on what digitalization means, but there's a far-reaching consensus on the essential points. The respondents most frequently understood digitalization as a term referring to the aspects of handling data (acquiring, processing and storing), converting analog information to digital formats, or linking systems and devices or plants together into networks.

# The most important technology trends

## Which trends are currently important in your business environment? (N=287 respondents, multiple responses possible)

**70%**
Software and apps (development and use of digital solutions)

**65%**
Mobile applications (mobile integration of business and production processes and of the service business)

**62%**
Connectivity/Internet of Things (networking of people, machines and products)

**53%**
Big/smart data & advanced analytics

**50%**
Cyber-physical systems (software, electronics, mechanics)

**45%**
Smart "worlds" (i.e. smart factory, smart grid, smart building)

**42%**
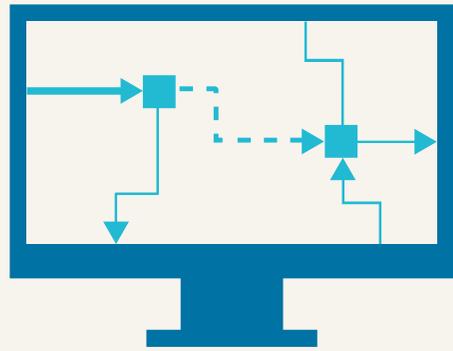Cloud computing (i.e. software licenses)

Assessed as belonging to one of the two top categories: "very important" or "important"

The development and use of new software and apps that help participants drive digitalization in their companies was said to be particularly important, with 70% of respondents rating it as a main factor. Here, the focus was on mobile applications that integrate business and production processes or optimize the service business. For more than 60% of Siemens' customers, the Internet of Things – the networking of people, machines and products – played the biggest role. Improvement of their analytic processes with big or smart data technology was the highest priority for 53% of all survey participants.

Even though they had considerable reservations about data security, 42% of all respondents already ranked cloud computing as a pioneering technology trend in the field of digitalization.

# Digitalization and business strategies

## Have you already developed an overarching digital strategy? (N=287 respondents)

**55** Yes (19%)

**105** Yes, in part (37%)

**123** No (43%)

**4** No indication (1%)

Many market observers are agreed that digitalization can only produce major innovations when it's based on a digital strategy drawn up as part of a general business strategy rather than on a series of uncoordinated field experiments.

According to the responses of Siemens' customers, more than half of the companies surveyed have a fully developed (19%) or at least partially developed (37%) overarching digital strategy. Such

development is relatively independent of company size: around 62% of the large organizations surveyed have a digitalization strategy or are working on one, while the figure is 49% for small and medium-sized companies.

Production, service, maintenance and planning were the most frequently named business areas for which a digital strategy was in place. The main reason for digitalization activities was to increase
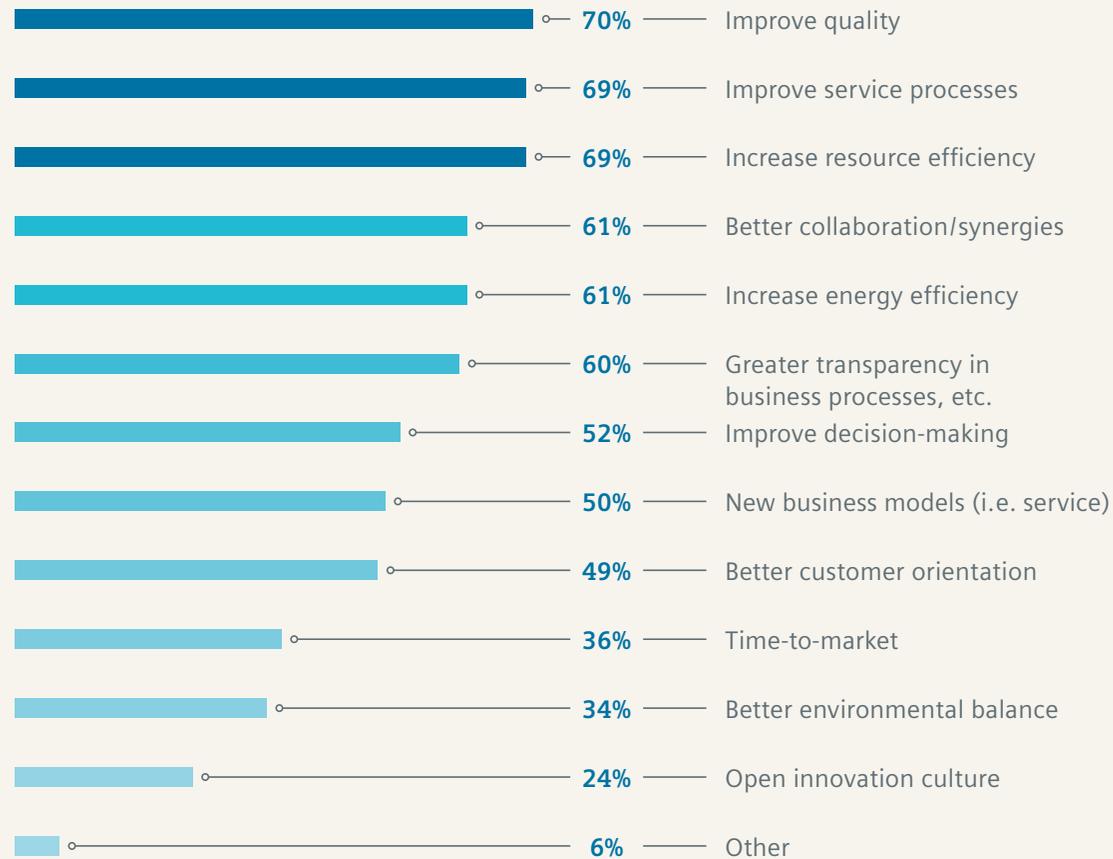
efficiency and effectiveness. Customer and supplier requirements were the key drivers in the companies' environments.

However, almost half of Siemens' customers in Germany haven't yet developed an overarching digital strategy because their customers and suppliers aren't yet actively demanding it.

# The potential of digitalization

## What do you expect from digitalization?

(N=287 respondents, multiple responses possible)

| | |
|---|---|
| **70%** | Improve quality |
| **69%** | Improve service processes |
| **69%** | Increase resource efficiency |
| **61%** | Better collaboration/synergies |
| **61%** | Increase energy efficiency |
| **60%** | Greater transparency in business processes, etc. |
| **52%** | Improve decision-making |
| **50%** | New business models (i.e. service) |
| **49%** | Better customer orientation |
| **36%** | Time-to-market |
| **34%** | Better environmental balance |
| **24%** | Open innovation culture |
| **6%** | Other |

Assessed as belonging to one of the two top categories: "very large impact" or "large impact"

Three main reasons were given for digitalization activities: the participants primarily expected enhanced quality, service and resource efficiency (70% and 69%). Companies also saw digitalization as having a major impact on their processes and procedures: 60% of all participants expected it to have a major influence on process-related aspects such as improved cooperation, the use of synergies and more transparent business processes (61% and 60%).
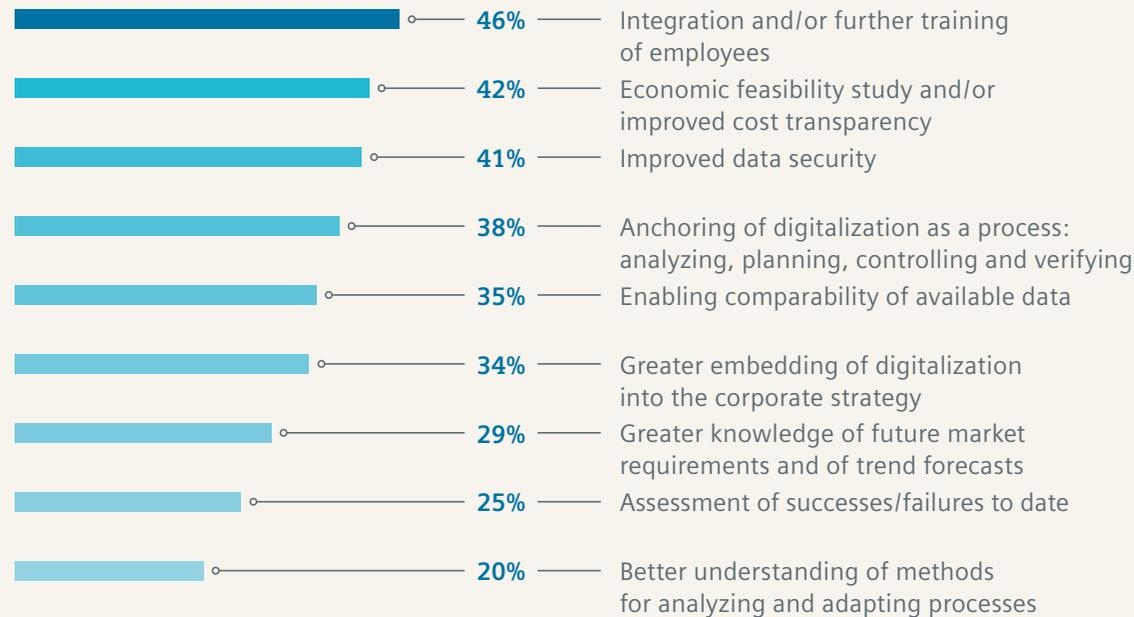
Considerably fewer participants expected positive impacts on aspects such as time-to-market (36%) or their environmental balance (34%).

Every second customer already expected to benefit from new business models or better customer orientation.

# The most important drivers of digitalization

## What would you have to do, or what would you need to have in order to be able to drive implementation further?

(N=287 respondents, multiple responses possible)

**46%** — Integration and/or further training of employees

**42%** — Economic feasibility study and/or improved cost transparency

**41%** — Improved data security

**38%** — Anchoring of digitalization as a process: analyzing, planning, controlling and verifying

**35%** — Enabling comparability of available data

**34%** — Greater embedding of digitalization into the corporate strategy

**29%** — Greater knowledge of future market requirements and of trend forecasts

**25%** — Assessment of successes/failures to date

**20%** — Better understanding of methods for analyzing and adapting processes

For Siemens customers in Germany, employee integration and training topped the digitalization agenda: 46% of all respondents cited this as the crucial aspect for driving implementation. Nearly as many respondents considered economic feasibility studies – and thus increased cost transparency – to be an important driver of digitalization. Improving data security was often cited as a relevant step toward implementation. Recent discussions about this issue had sensitized many companies to the need to take action.
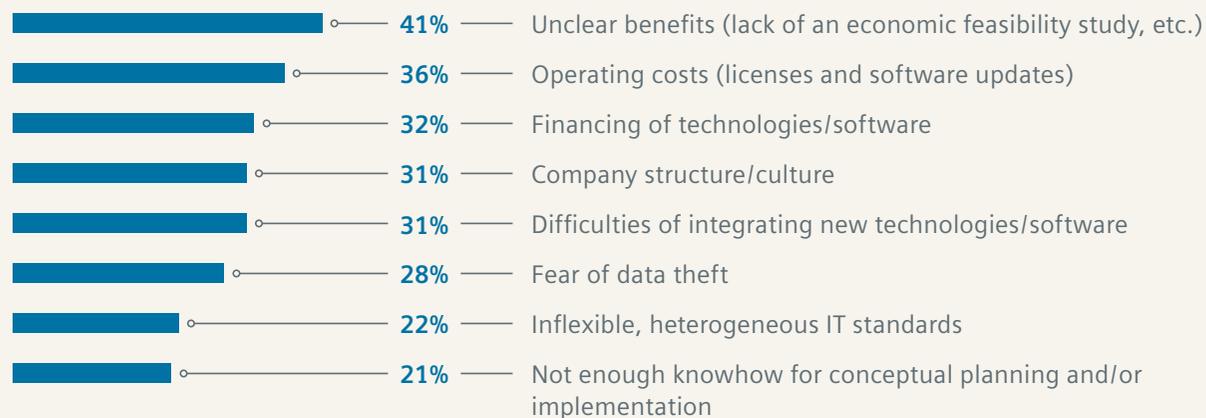
38% of all participants felt that digitalization must be anchored in companies as a process comprising all phases from analysis and planning to controlling and verifying. Every third participant was convinced that digitalization must be more firmly embedded in corporate strategy as an essential condition for its implementation.

# Greatest barriers and challenges

## What holds you back from making even greater use of digital technologies and processes at your company?

(N=287 respondents, multiple responses possible)

### Barriers within the company

- 41% — Unclear benefits (lack of an economic feasibility study, etc.)
- 36% — Operating costs (licenses and software updates)
- 32% — Financing of technologies/software
- 31% — Company structure/culture
- 31% — Difficulties of integrating new technologies/software
- 28% — Fear of data theft
- 22% — Inflexible, heterogeneous IT standards
- 21% — Not enough knowhow for conceptual planning and/or implementation

### External barriers

- 46% — Lack of technical standards
- 39% — Discussions related to data security (such as the NSA scandal)
- 35% — No demand for it from customers or suppliers
- 23% — Discussion within industry associations is just beginning
- 23% — Technologies/software not suited for this purpose
- 23% — Market isn't ready yet
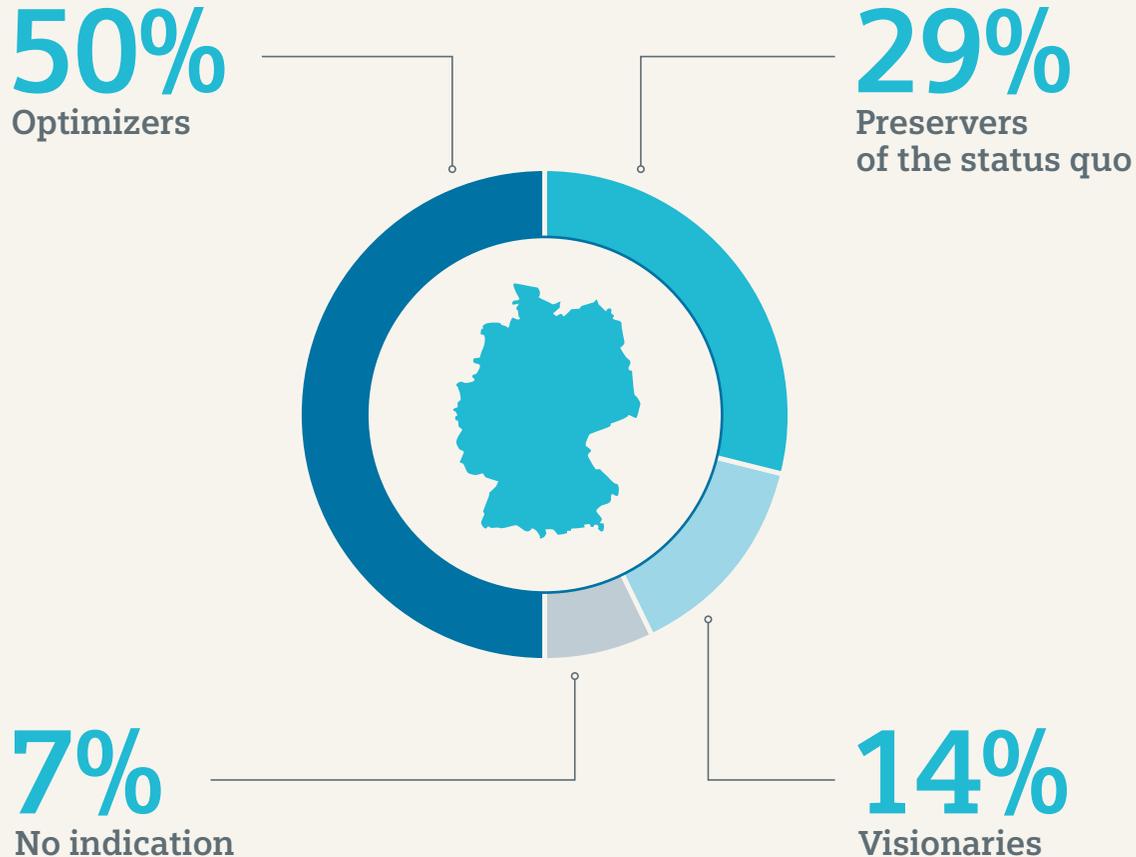- 21% — Lack of legal and regulatory framework

Categories below 20% are not shown.

In many cases, a lack of economic feasibility studies and a lack of clarity regarding the benefits of digitalization initiatives are dampening the willingness to make investments. In addition, many respondents feared that the cost of implementing and operating digitalization solutions would be high and believed that their own workforces had too little digitalization-related knowhow.

Besides these internal factors within companies, the survey also asked about external barriers. Here, the lack of technical standards played a particularly strong role: 46% of the respondents saw this deficiency as one of the primary barriers to relying more heavily on digital technologies. Data security was the second major issue: for four out of ten respondents, this was the reason for not seeking progress more aggressively in this area. Every third respondent indicated that they didn't rely on digital technologies more because there was no demand for it from customers or suppliers. In addition, nearly one-third also pointed out that the discussions within the relevant industry associations were just beginning.

Overall, only one-third of the companies surveyed had already achieved far-reaching implementation of their digitalization plans. Most assessed the progress of their implementation as significantly lower; nearly half saw themselves as just beginning.

# How the respondents view themselves

**50%**
Optimizers

**29%**
Preservers
of the status quo

**7%**
No indication
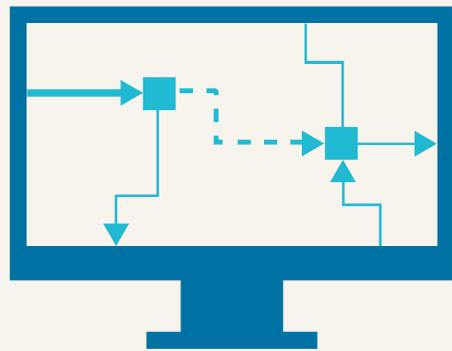
**14%**
Visionaries

## Half the participants see themselves as "optimizers."

In general, the majority of the people who took part in the Siemens survey saw digitalization as playing an evolutionary role in their fields of business. Only a small portion of the respondents intended to tap into the new technologies' disruptive potential: 14% of the companies categorized themselves a "visionaries" and were using digitalization projects to realign their future core business.

Half the participants saw themselves as "optimizers." They primarily used their digitalization projects to improve their core processes and focused their invest-ments accordingly. About 29% counted themselves among the "preservers of the status quo" and limited themselves to occasional projects.

# Institutionalization of digitalization

**Does your company have a position/governing body that bears central responsibility for these topics and makes decisions regarding a digital strategy?**
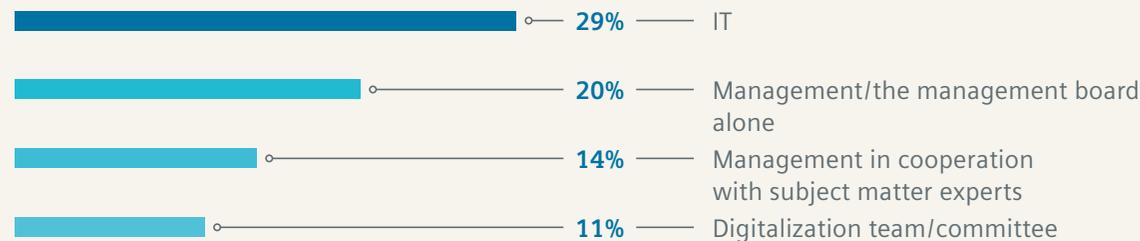
## 53% — Yes

## 46% — No

### Yes, it's ...
**(N=151 respondents, multiple answers possible, responses clustered)**

| | |
|---|---|
| **29%** | IT |
| **20%** | Management/the management board alone |
| **14%** | Management in cooperation with subject matter experts |
| **11%** | Digitalization team/committee |

Categories below 5% are not shown.

## For more than half of Siemens' customers, responsibility for digitalization is centralized.

For 53% of the respondents, digitalization was institutionalized, and responsibility for it was located in a central position/governing body, usually with the involvement of the IT department or top management. For companies in which digitalization had not been centralized, a variety of specialized departments frequently played a significant role alongside the top management; IT departments were only ranked third in such cases.

# Information resources

## Further information on the content is available from:

### Address

Siemens AG
Wittelsbacherplatz 2
80333 Munich
Germany

### Concept and coordination

**Communications and Government Affairs**
Helga Bogensperger
helga.bogensperger@siemens.com

In cooperation with Siemens Germany's communications department

### Consulting and execution

buchele cc GmbH

### Layout and production

hw.design GmbH

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