

SIEMENS

Ingenuity for life

Digitalization

Trends and Solutions for a More
Competitive Portugal 2015

Siemens Customer Survey | Result Report

siemens.com

Contents

Foreword

Page 3

Carlos Melo Ribeiro
CEO of Siemens Portugal

Introduction

Page 4

The key results from Portugal (summary)

Page 5

Survey results

Page 7

European Digital Maturity Enterprise Index Ranking

Page 20

Outlook: Digitalization at Siemens

Page 22

Foreword



Carlos Melo Ribeiro

CEO of Siemens Portugal

Dear readers,

The digitalization of daily life, work and companies has made continuous advances over the past 20 years. The process of translating the analog world into its virtual image has forever changed the global community. And this development is a fact.

It is naturally impossible for Portugal to escape this process of change, because digital technologies interconnect people around the world. Companies need these technologies in order to remain competitive on international markets, and the same holds true for individual countries. Nearly everyone in Portugal now has access to the Internet, and the Portuguese make extensive use of smartphones and tablets. This includes members of the young, technologically experienced generation in particular, who are increasingly moving into key positions within the business community. This trend facilitates the introduction of new technologies into companies – and strengthens our competitiveness over the long term.

Yet are companies already using these technologies at a level that will ensure success in the digital era? Will they become pioneers or followers over the long term? These questions are illuminated by a study that surveyed Siemens customers in over 70 companies. **The survey results show not only that Portugal can make better use of its existing potential, but also that Siemens is an ideal cooperation partner for bringing about a digital future.**

Over the course of more than 150 years, Siemens has developed extensive experience in the areas of digitalization, electrification, automation, intelligent infrastructures, and new solutions for health and mobility systems. Siemens has digitally transformed

the complete value chain in these industries, from design and production to maintenance. Wind farms that adapt to the weather, intelligent traffic guidance systems, remote controlled infrastructure management, and the optimization of production times are just a few examples that document Siemens' digital expertise.

If we know which goals our customers are pursuing, we can help them achieve their objectives by providing them with digital technologies. Can the Internet of Things increase productivity? Can daily operations be digitalized? What is the situation with regard to employee training, and what about the associated costs? By answering these questions, we are paving the way for the next steps in order to help guide our Portuguese customers toward a successful digital future.

With best regards,

A handwritten signature in blue ink that reads "Carlos Melo Ribeiro". The signature is written in a cursive, flowing style.

Carlos Melo Ribeiro

Introduction

Although digitalization has made extensive progress in our world, it is still only in its infancy. In the next 30 years, computing power, storage capacity, and the data transmission rate of microchips will increase a thousandfold. This development will not only transform our everyday lives, it will also transform the entire global economy. However, the level of preparedness for this change varies widely in different countries.

To gain an overview of the status of digitalization in Portugal, Siemens conducted a telephone survey of 72 technology-oriented and strategic decision-makers from customer companies in various sectors of industry between September and November 2015. Beyond examining what digitalization means to them, the survey focused on the degree to which the companies have become digitalized, the areas in which respondents could identify potential, the places where they see barriers, and the extent to which they perceive Siemens as a company that can help them on their digital journey.

The company is ideally positioned to help its customers in this area: With its Vision 2020 corporate strategy, Siemens is helping to shape digital change worldwide. As a result, Siemens customers can count on a partner who is promoting digitalization in the areas of electrification, automation and urban infrastructures. In addition, the company offers several independent digital products, including Product Lifecycle Management (PLM) software from Siemens, which enables over 77,000 customers worldwide to efficiently and costeffectively manage all the information relating to the entire lifecycle of a product.

Yet surveys in an international comparison verify that the needs of each individual country are weighted differently. This is underscored by the **Digital Maturity Enterprise Index Ranking**, a study conducted by the consulting firm Deloitte to supplement the Siemens survey. The objective was to determine the degree to which digitalization has transformed companies in 29 European countries and to determine where precisely Portugal fits into this environment. Combined with the findings from its own survey, Siemens can learn how to selectively support companies in Portugal to successfully meet requirements in the future.

Key results from Portugal (summary)

01 **A comprehensive customer survey on digitalization in Portugal**

Survey participants comprised 72 decision-makers from companies of all sizes and from many industries across Portugal. The primary goals were to find out what digitalization means to the survey participants, what objectives they are pursuing, how they gauge the level of technology in their companies, and what challenges they currently face in the field of digitalization.

02 **Digitalization is viewed primarily as a transition from analog to digital**

Respondents primarily view digitalization as the process of switching from analog to digital. With this step, respondents hope to achieve what they consider to be the greatest benefit of digitalization: the optimization of daily work operations, which is mainly expected to result in better resource efficiency, quality, and service.

03 **The most important technology trends**

Across industries, respondents consider the Internet of Things, software and apps, as well as cyber-physical systems to be the most important digital technology trends. They are also the ones that have been most broadly implemented to date. Implementation is least advanced in Big Data, mobile technologies, and smart worlds.

Key results from Portugal (summary)

04 Digital strategy and implementation

Two-thirds of the interviewed companies have already developed digital strategies. However only 39% have conducted targeted studies of processes and economic efficiency. Some feel that their company has not fully exploited its potential, while others view themselves as digital pioneers in Portugal. IT departments generally serve as the contact partners.

05 Challenges for digitalization

The importance of digitalization is recognized and has resulted in new challenges and opportunities. The costs for licenses, software updates and technologies, as well as for employee training are the most important internal barriers. Externally, there is a lack of government support through tax breaks. The lack of technical standards is another problem.

06 Perception of Siemens

The majority of those surveyed consider Siemens to be a pioneer in Portugal. In addition, the majority perceives Siemens as a visionary for digitalized processes and products as well as for new business models. Most of the Siemens customers that were surveyed in Portugal are also interested in digital pilot projects.

07 The Digital Maturity Enterprise Index Ranking

A benchmark analysis by Deloitte complemented the Siemens survey. This research aimed to discover the degree to which digitalization efforts have transformed companies in the 29 countries examined. To achieve this, Deloitte created a European reference index of digital maturity.

Survey results

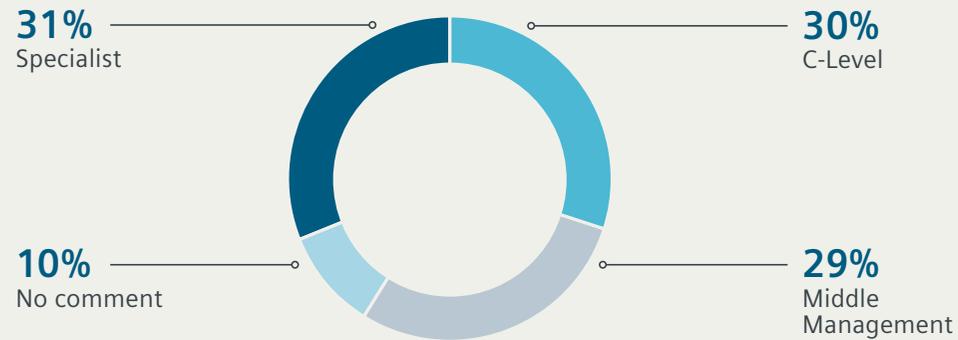
The survey questions covered a wide range of issues relating to digitalization and its outstanding importance for the future of the economy. In conducting the customer survey, Siemens focused, among other things, on two key aims:

Siemens' first aim was to find out which aspects of digitalization are the most important to survey participants, which trends they see as particularly important in their individual 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 72 Siemens customers from various industries

Position (N=72 persons surveyed, clustered)



As part of this customer survey, Siemens spoke with 72 Siemens customers from various industries. The survey was conducted between September and November 2015. More than three-quarters of the participants work at small and medium-sized companies, while 15% work in large companies with over 500 employees. Over half the respondents make decisions for the company as managers in leadership positions, with 30% serving in the top level of management. In addition, the survey included some individuals who implement strategies at the operational level.

Company size (N=72 persons surveyed, clustered)

11 
Large (15%)

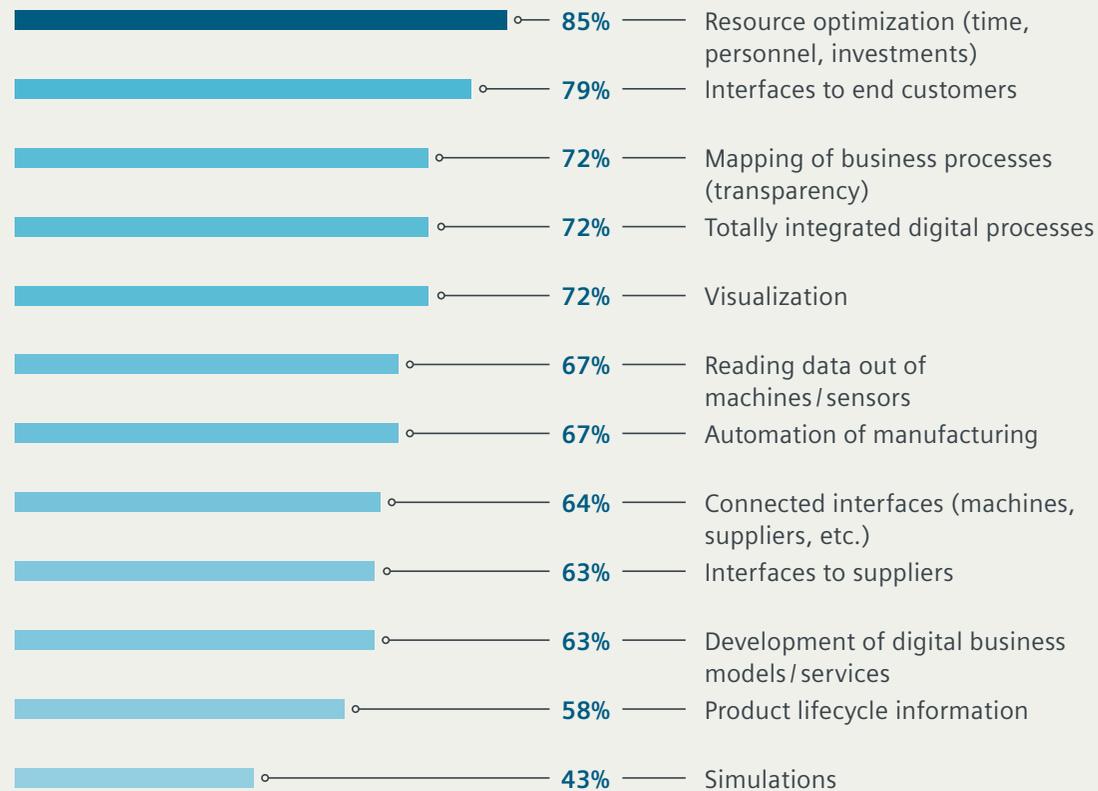
56 
Small and medium-sized (78%)

5
No comment (7%)

The potential benefits of digitalization

Which of the following terms provide the best summary of what you understand digitalization to mean? How important are these areas to you?

(N=72 persons surveyed)



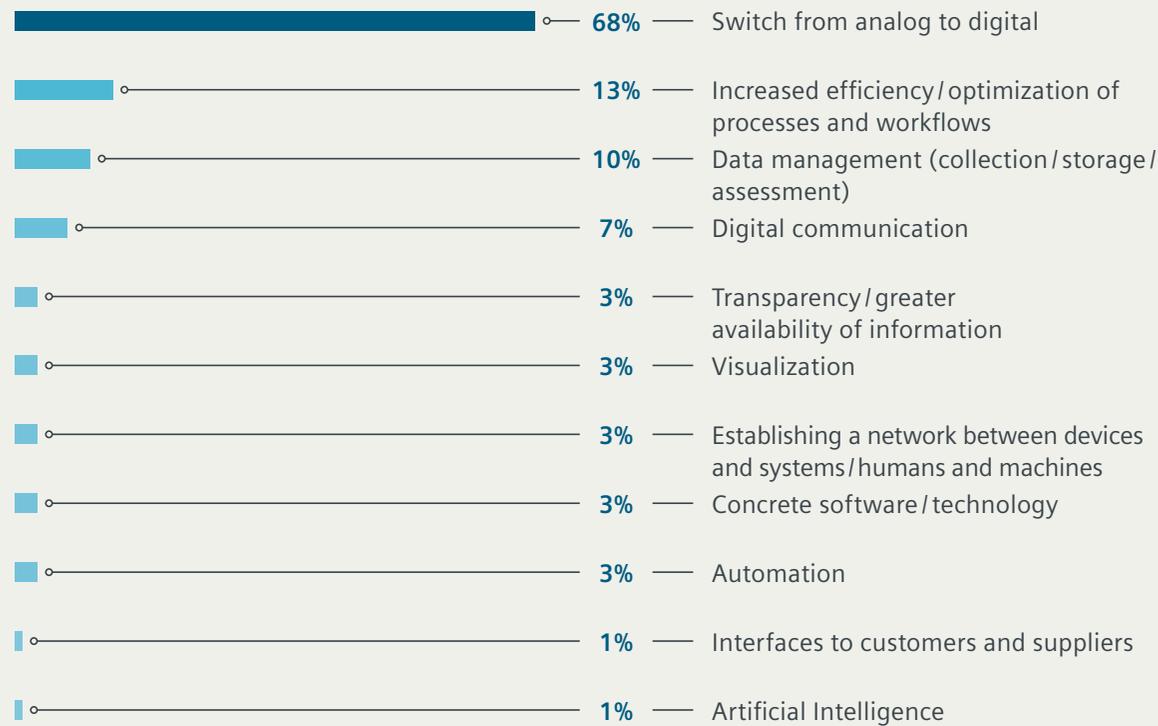
Assessed as belonging to one of the two top categories: "very important" and "important"

Of those surveyed, 85% feel that the greatest potential benefits of digitalization can be found in the optimization of resources – whether work time, personnel, or investments. Another 79% highlight the importance of interfaces to the end customer, while 72% want to establish consistent process integration, visualize complex processes and bring about greater transparency of business processes.

The potential benefits of digitalization

What does the term “digitalization” mean to you?

(N=72 persons surveyed, multiple answers possible, unsupported question, responses clustered)



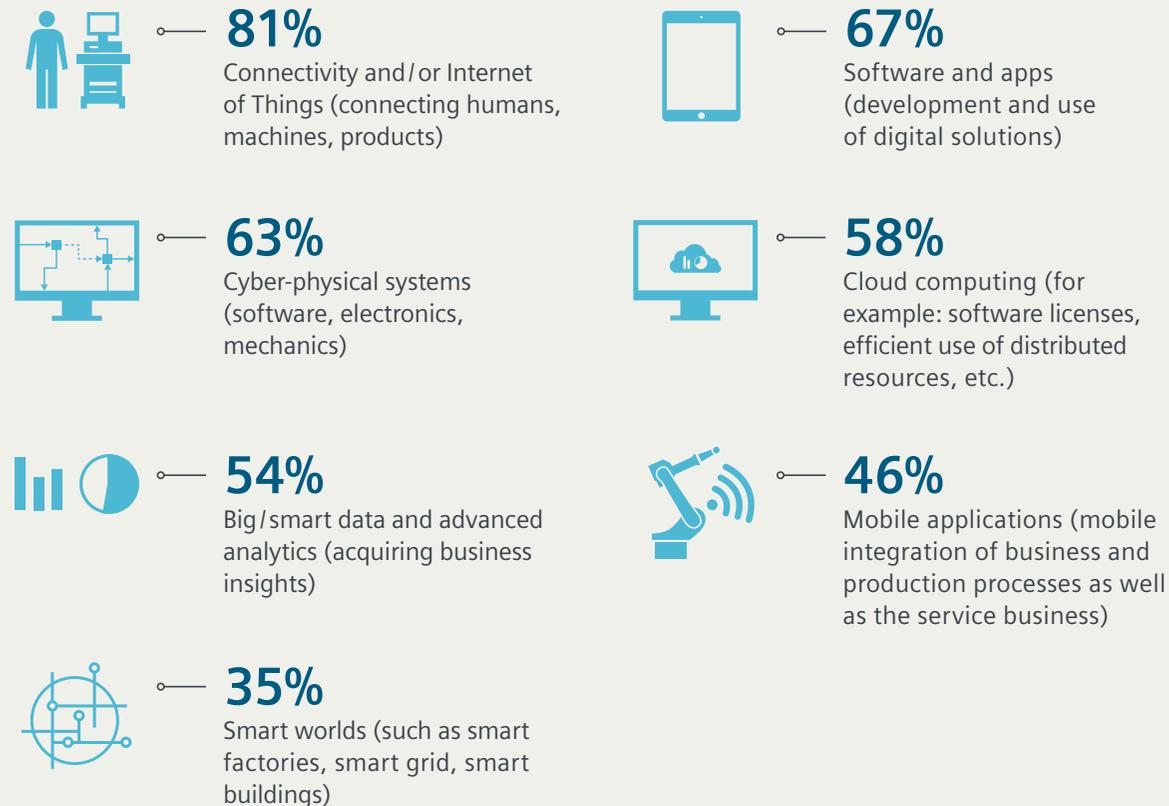
Not shown: “Other” (8%); “No comment” (1%)

In addition, respondents were asked to describe in their own words what digitalization means to them. The result: for 68%, the most important aspect at the moment is the migration of existing analog information to digital formats. By contrast, other aspects of digitalization are a considerable distance behind – 13% of respondents name the improved efficiency and optimization of processes and work processes, 10% list data management, and 7% cite digital communication.

Trends: Connectivity is the most important ground-breaking development

How important do you consider the following trends to be?

(N=72 persons surveyed)



A solid 81% of the Siemens customers surveyed consider the Internet of Things – and hence the networking of people, machines, and products – to be the most important ground-breaking digital development. For 67% of survey participants, the development and use of new software and apps is also important. Some 63% of those surveyed highlight the significance of cyber-physical systems. Nevertheless, 58% also classify cloud computing as the ground-breaking technology for digitalization. Around 40% of the survey participants consider these trends to be fully implemented or relatively far advanced. Siemens Customer Survey respondents from Portugal considered mobile apps and smart worlds less important than respondents from Brazil and Germany did.

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

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=72 persons surveyed, multiple answers possible)



Not shown: "Other" (7%)

In the view of 67% of those surveyed, digitalization is driven primarily by competition between companies. Other factors mentioned include budget considerations (51%), customer requirements (50%), and the role of internationalization and export (31%).

In addition, about 80% of those surveyed named several factors that can help further advance digitalization: these include the integration of digitalization into the corporate strategy, the training of the workforce, the integration of employees into digital work processes, and improved data security.

According to survey participants, digitalization strategies could be implemented more swiftly if the type of digitalization required by the market were clearer along with the trends that would be predominant in the future. In addition, they emphasized the importance of economic feasibility studies and cost transparency.

Three-quarters of the respondents would also like to have a better understanding of digital methods that help analyze and adapt processes. And no less than seven out of 10 emphasize that case studies on successful or failed digitalization projects would be helpful.

Digitalization and business strategies

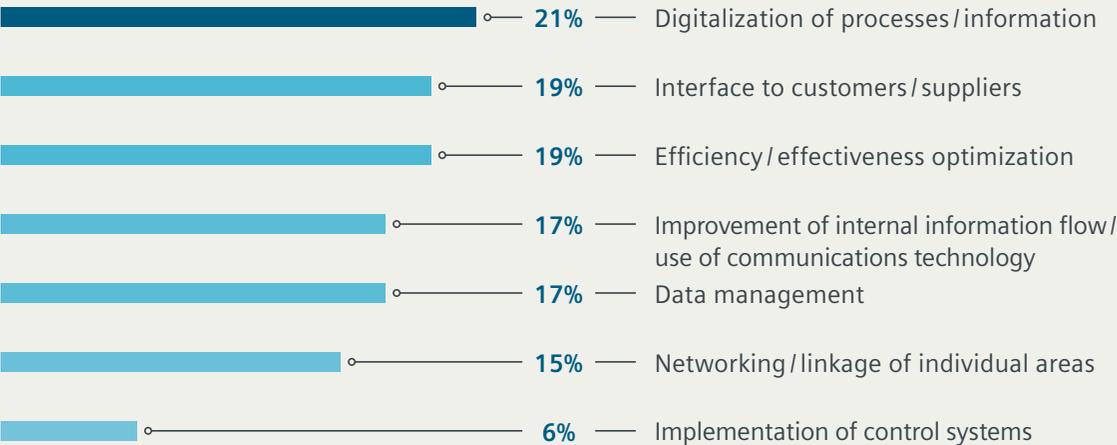
Would you say that you've already developed an overarching "digital strategy"?

(N=72 persons surveyed)



Could you briefly describe this strategy?

(N=48 persons surveyed, multiple answers possible, unsupported question, responses clustered)



Not shown: "Other" (15%), "No comment" (4%) and categories with values below 3%

In a company, digitalization can only produce major innovations if efforts are based on a corresponding plan that is additionally incorporated into the general business strategy.

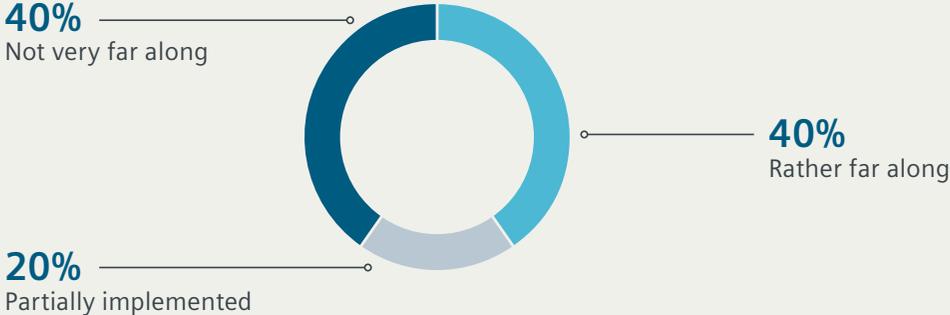
According to the responses of Siemens' customers, one-third (35%) have a fully developed overarching digital strategy in their organizations. So far, just under a third (32%) have only partially implemented that strategy, while one-third (33%) have not implemented the strategy at all.

In accordance with their priorities, most of the companies focus primarily on digitalizing existing analog information in order to improve efficiency and optimize processes and work procedures. They also focus on creating interfaces to customers and suppliers in order to optimize processes and make increased use of digital communication options.

Digitalization and business strategies

How far along are you currently with regard to implementation within your company?

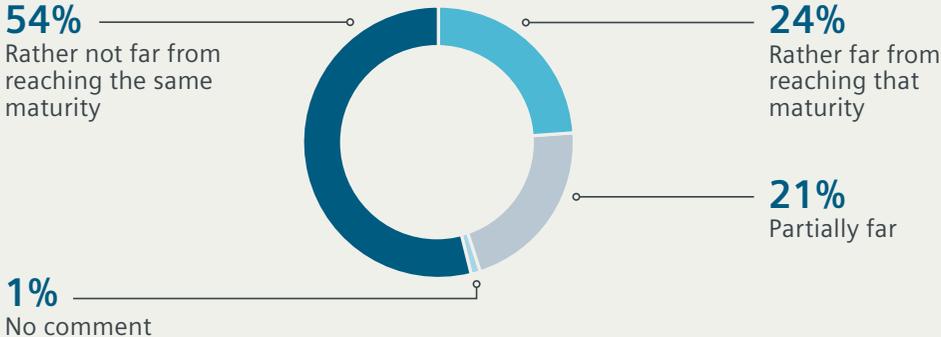
(N=72 persons surveyed)



Of the companies, 39% have conducted economic feasibility studies while the remaining companies have not. In addition, 40% of the companies estimate that they have already largely implemented their digitalization plans. In a national comparison, more than half of respondents consider themselves to be nearly on a par with benchmark companies. By contrast, one fourth of all companies feel they have not yet progressed to that point.

How would you rate the progress of the digitalization process within your company compared with benchmark companies on the Portuguese business market?

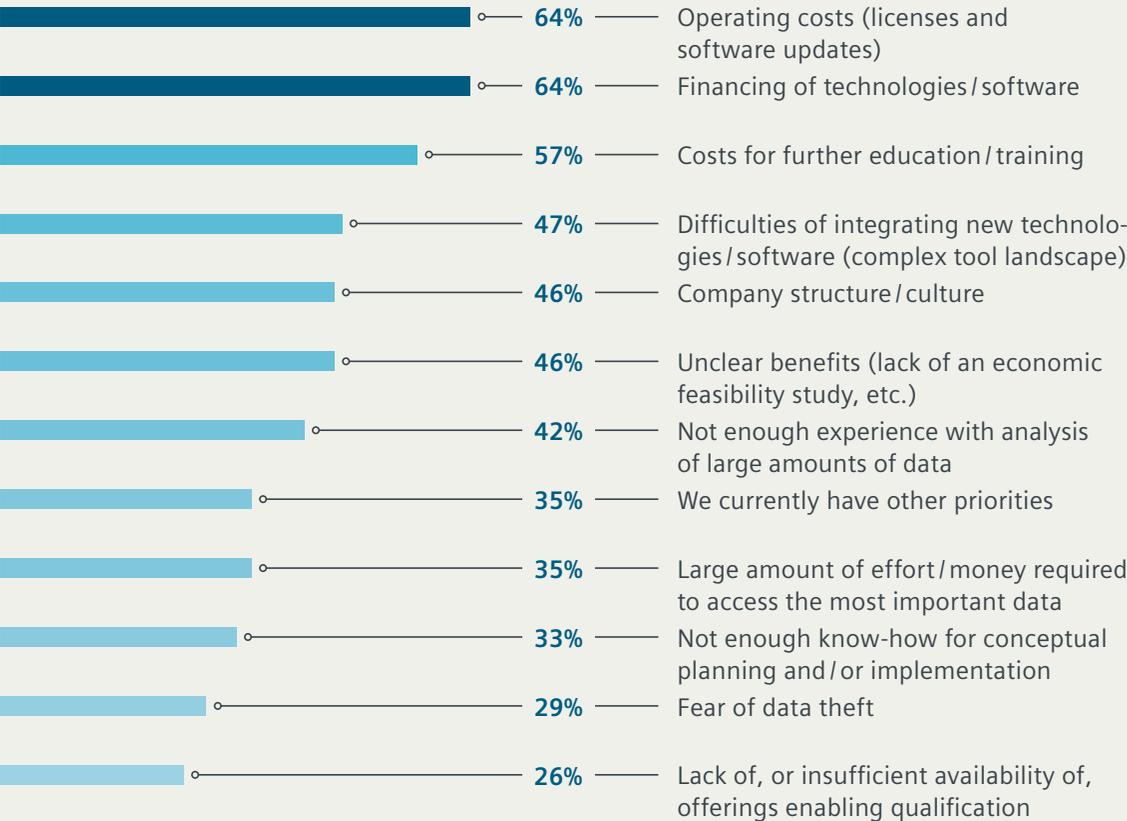
(N=72 persons surveyed)



Barriers and challenges

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

Barriers within the company (N=72 persons surveyed, multiple answers possible)



Not shown: "Other" (4%) and categories with values below 23%

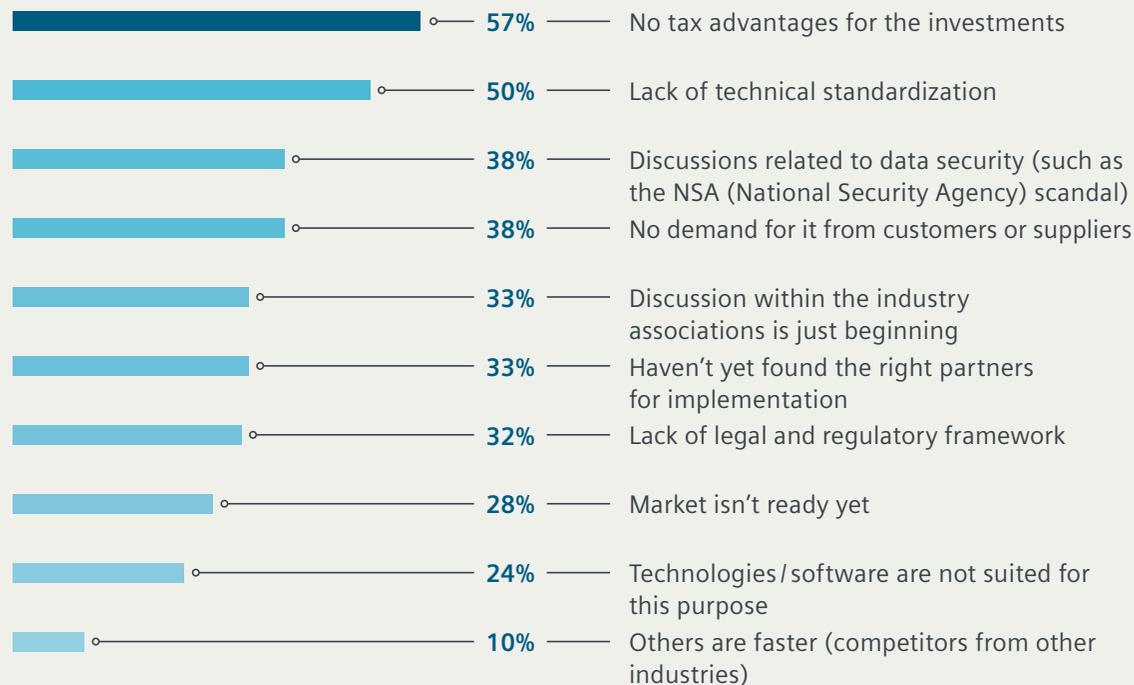
In Portugal, digitalization is not as advanced as it could be. This has been confirmed by the Siemens survey as well as the digitalization index created by Deloitte, a Siemens partner.

The surveyed companies view costs as the most significant internal barriers: for a good 64%, software licenses, updates, and the purchase of additional digital technologies are negative factors. In addition, the training of their own employees (57%) and the integration of digital technologies into the existing infrastructure of the companies (47%) discourage many from making larger investments. The structure and culture of the company (46%) and the unclear benefits (46%) are other internal factors that hinder digitalization.

Barriers and challenges

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

External barriers (N=72 persons surveyed, multiple answers possible)



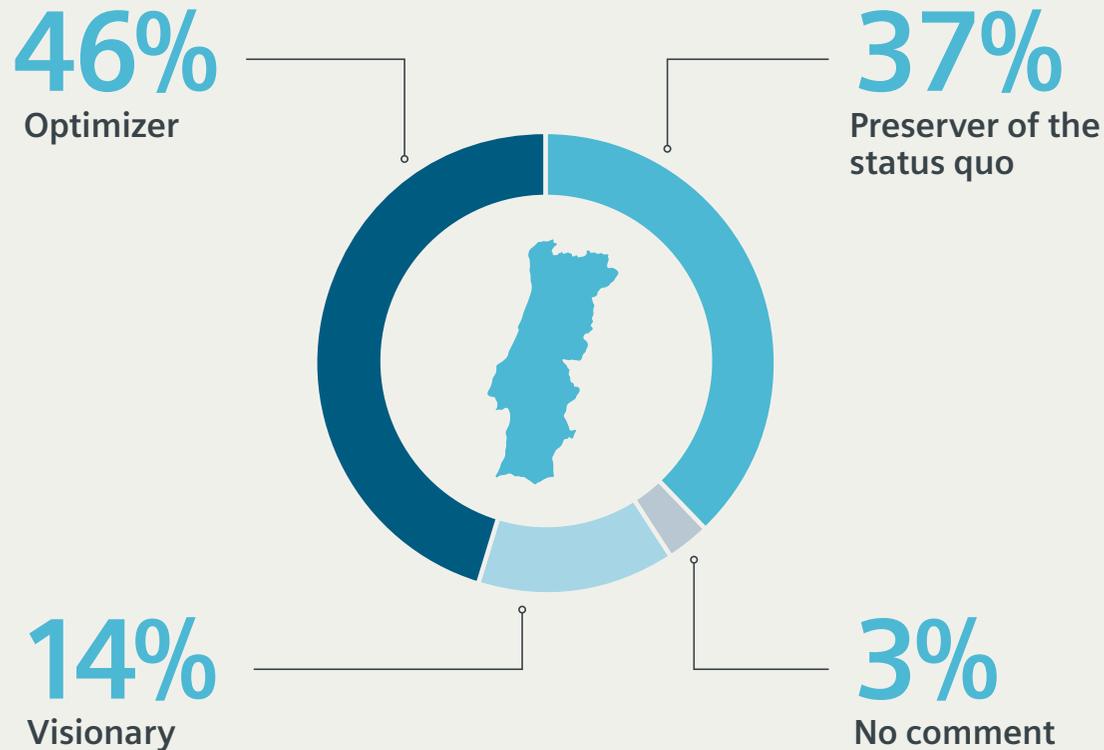
Not shown: "Other" (9%)

External factors also play a role: 57% wish there were tax incentives for investments in digitalization. At least half of the companies complain about the lack of technical standards. International debates about data security, such as the NSA scandal, discourage approximately four out of ten companies. Just as many companies indicate that customers and suppliers do not expressly support increased digitalization. In addition, nearly one-third pointed out that the discussion about digitalization was only just beginning within the relevant industry associations. Finally, the lack of a sufficient legal and regulatory framework for digitalization was noted as well.

How the respondents view themselves

How would you categorize your company?

(N=72 persons surveyed)

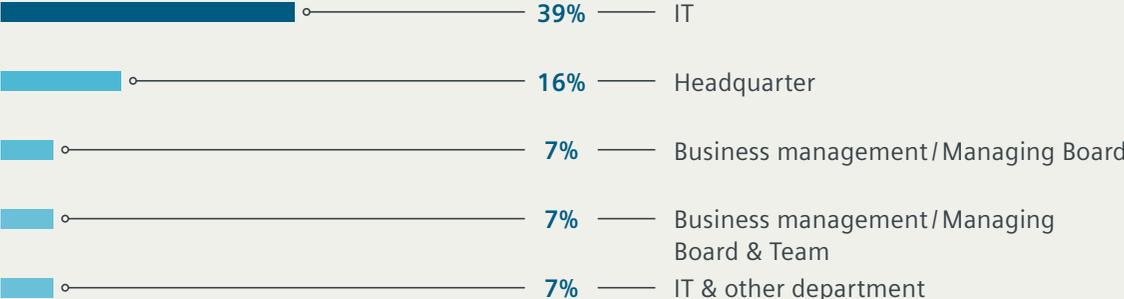


Nearly half of participants (46%) saw themselves as “optimizers” among whom digitalization projects determine the core processes. Another 38% counted themselves among the “preservers of the status quo” and limited themselves to individual projects. By contrast, only a small portion of the respondents intended to tap into the disruptive potential of the new technologies: 14% of the companies categorized themselves as “visionaries” who were using the digitalization projects to realign their future core business.

Institutionalization of digitalization

Does your company have a position / body that bears central responsibility for these topics and makes decisions regarding a digital strategy?

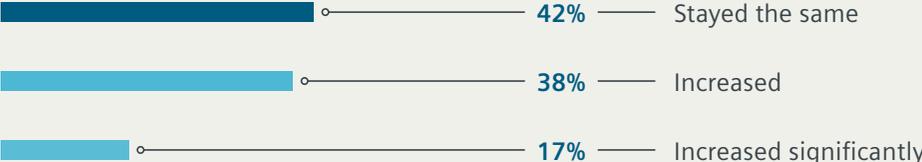
Yes, ... (N=44 persons surveyed, responses clustered)



Not shown: "Other" (16%) and categories with values below 6%

Compared with the last tax year, how would you describe your organization's activity in terms of digitalization investment?

(N=72 persons surveyed)



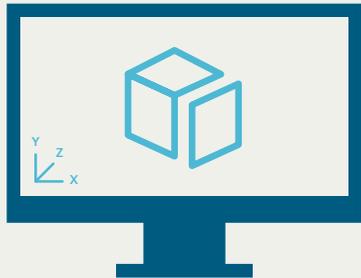
Not shown: "Reduced" (1%), "Reduced significantly" (1%), "I don't know" (1%)

For more than half of the Siemens customers surveyed (61%), the responsibility for digitalization was centralized. This responsibility is most frequently located in the IT department. For companies in which digitalization has not been centralized, the responsibility primarily rests with top management. Compared to last fiscal year, investments in digitalization and the associated implementation during the current fiscal year will remain at the same level or will be increased. They are up to 5% of total investments.

How Siemens is perceived

Are you interested in jointly creating pilot projects?

(N=72 persons surveyed, unsupported question, responses clustered)



43  **Yes**
(60%)

12  **No**
(17%)

7  **Possibly**
(10%)

Not shown: "No comment" (12%) and categories with values below 2%

The majority of respondents view IT companies (19%) and Siemens (14%) as the best cooperation partners for advancing digitalization projects in their companies. Similar to the results of surveys in Germany and Brazil, Siemens customers in Portugal (60%) view pilot projects as an excellent opportunity to expand digitalization in their companies. For 68%, Siemens is a pioneer of digitalized products, and 64% favor the new business models often associated with digitalization. Overall, 78% of survey participants perceive Siemens as a pioneer in Portugal.

The Digital Maturity Enterprise Index Ranking

Siemens cooperated with the consulting firm Deloitte to supplement the survey of Siemens customers in Portugal. Deloitte conducted research to benchmark the level of digitalization at Portuguese companies within a European context.

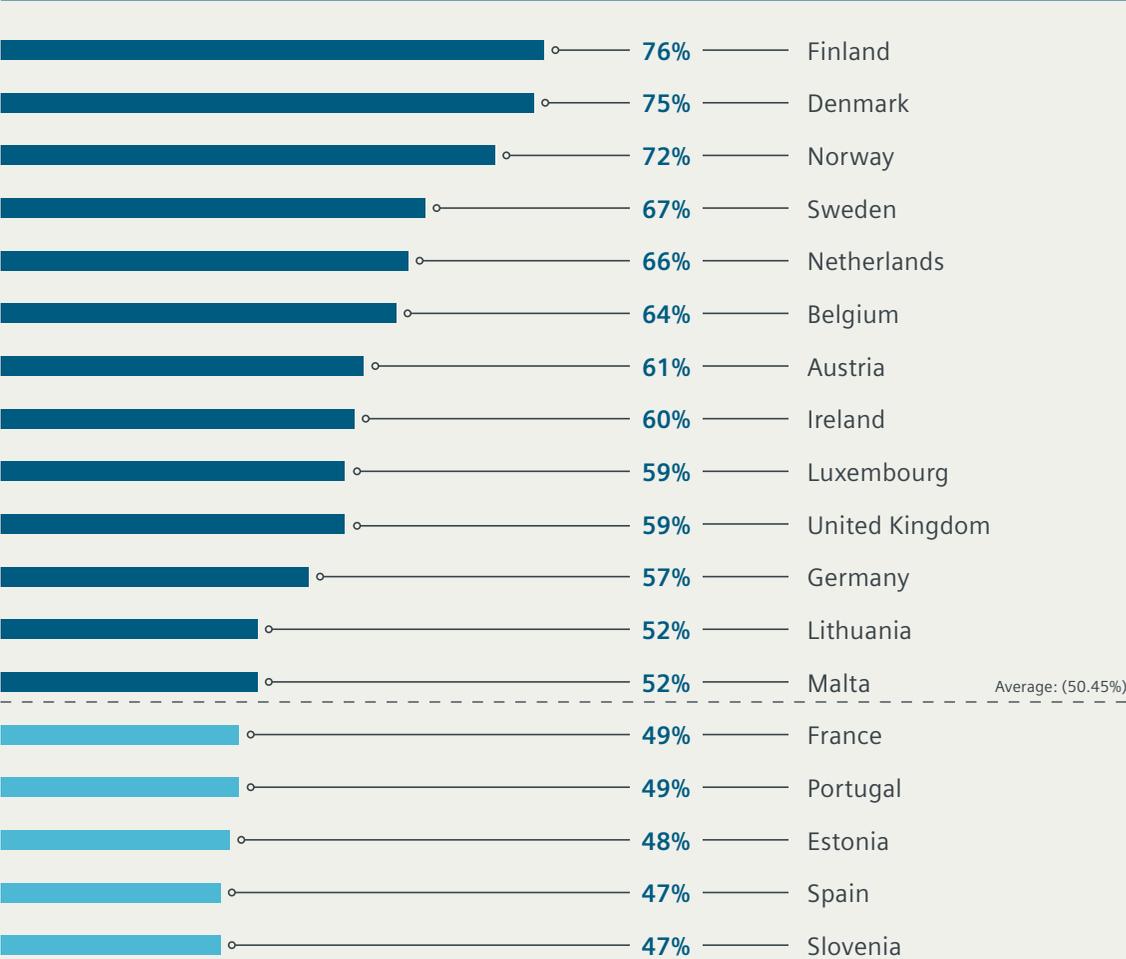
With the help of 107 indicators, 18 categories and six dimensions, they determined the level of digitalization at companies in 29 European countries. This method made it possible to distinguish between several levels of maturity in different areas (from the legal environment to Big Data adoption) within a country. In addition, it revealed the underlying factors leading to the various stages of national development.

All the information, including data from publicly available sources, was condensed into a single number – the Digital Maturity Enterprise Index. This index was then used to compare the level of digital development in Portuguese companies to that of companies in other European countries.

Deloitte Digital Maturity Enterprise Index Ranking

Deloitte Digital Maturity Enterprise Index Ranking

(■ Advanced, ■ Transitional)



As far as the development status of digitalization throughout Europe is concerned, Portugal falls into the “bottom half” of the country rankings. When looking at details, however, Portugal demonstrates clear strengths. According to the Deloitte research, Portugal’s biggest advantage can be found in process optimization and operating efficiency. Portugal scores well in these areas with regard to the management of the delivery chain and financing. In addition, the country has already successfully implemented the Internet of Things – in this area, Portugal is ranked tenth. By contrast, the biggest barrier for the consistent digitalization of the Portuguese economy can be found in the digital expertise and training of its employees – in a country-by-country comparison, Portugal is currently ranked only 14th. This is also confirmed by the survey of Siemens customers: the digitalization technologies exist – they simply have to be selectively pursued by the companies.

Not shown: countries with values below 46% (countries ranked between 19th and 29th)

Outlook: Digitalization at Siemens

Digitalization is a technology that permeates nearly every aspect of our lives. From networked devices in personal life to increasingly networked systems in industry – we are all living in a world that is becoming more and more digitalized. When it comes to digitalization, Siemens is setting trends in all industrial sectors in which it is represented.

The company uses digitalization to connect the physical and virtual worlds. At Siemens, the physical world means gas and wind turbines, trains, and medical imaging equipment. In addition, Siemens is a leader in the electrification and automation of power plants and networks, transportation systems, urban infrastructure and factories.

For many years, Siemens has been adding another dimension to its familiar offerings: the virtual world. There are currently more than 300,000 Siemens devices interconnected via the Internet thanks to secure VPN tunnels. These devices generate huge amounts of status and operating data. The company uses its industrial know-how to acquire new knowledge – thus turning big data into smart data.

Siemens is using these findings to improve the stability of power grids, increase the energy efficiency of buildings and help surgeons with treatments guided by imaging techniques – and to enhance thousands of other things that keep our modern world running smoothly.

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

Siemens Portugal

Joana Garoupa
joana.garoupa@siemens.com

Consulting and execution

buchele cc GmbH

Layout and production

hw.design GmbH

Copyright notice

The copyrights of all picture and infographic material are held by Siemens AG.

Reproduction of the report in whole or in part requires the permission of the publisher.

This also applies to storage in electronic databases or on the Internet and copying onto CD-ROMs. Any exploitation and usage which is not explicitly allowed by copyright law, in particular reproduction, translation, storage in electronic database, on the internet and copying onto CD-ROMs of this print work requires prior consent of the publisher.

While every effort has been made to verify the accuracy of the information contained in this document, neither Siemens AG nor its affiliates can accept any responsibility or liability for reliance by any person on this information.

© 2016 by Siemens AG, Berlin and Munich