Survey “Industry 4.0“

Results of the Exhibitors Survey

HMI 2015

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Content

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Study Characteristics

Method	Structured exhibitor survey at the Hannover Messe 2015; bilingual online-survey in English and German
Trade Fair / Target Group	National und international suppliers and customers in the area of industrial automation and IT, energy and environmental technologies, industrial supply, manufacturing technologies and services as well as research and development
Sample	Sample size: 278 completed interviews, thereof 243 in German (87%) and 35 in English (13%)
Survey Period	April, 13th to 17th, 2015
Content	▪ Understanding of *Industry 4.0* ▪ Maturity level and implementation of *Industry 4.0* ▪ Top priority issues of *Industry 4.0* including detailed information ▪ Comparison within different company sizes ▪ Statistics / customer contacts

Content

Management Summary

1	There is **no common understanding** of what *Industry 4.0* means. The scope ranges from **“industrial revolution“** to **“cliche"**. Primarily Industry 4.0 is associated with the topics **“network“** and **“intelligent systems“**. For almost two-third of all interviewed companies *Industry 4.0* is already an issue.
2	In contrast to many other surveys concerning the topic *Industry 4.0* more than 80% of the respondent companies state that they have already been approaching the issue *Industry 4.0*. This clarifies the missing common understanding of *Industry 4.0*. Often many companies are not aware that they already have touch points with *Industry 4.0*.
3	About 40% of the companies who have already been approaching the issue *Industry 4.0* even dispose of an *Industry 4.0* representative. But his role is not clearly defined and he is organizationally located at different positions ranging from “sales” to “management board”.
4	The most relevant topics regarding *Industry 4.0* are **IT-security/data security** and **communication interfaces** and **staff qualification**. In comparison with the company sizes there are differences in the evaluation.
5	There is a **need for assistance in *Industry 4.0* topics**, e.g. more than 40% of respondents state that they need assistance regarding the topics **IT-security/data security** or **certification of systems**.

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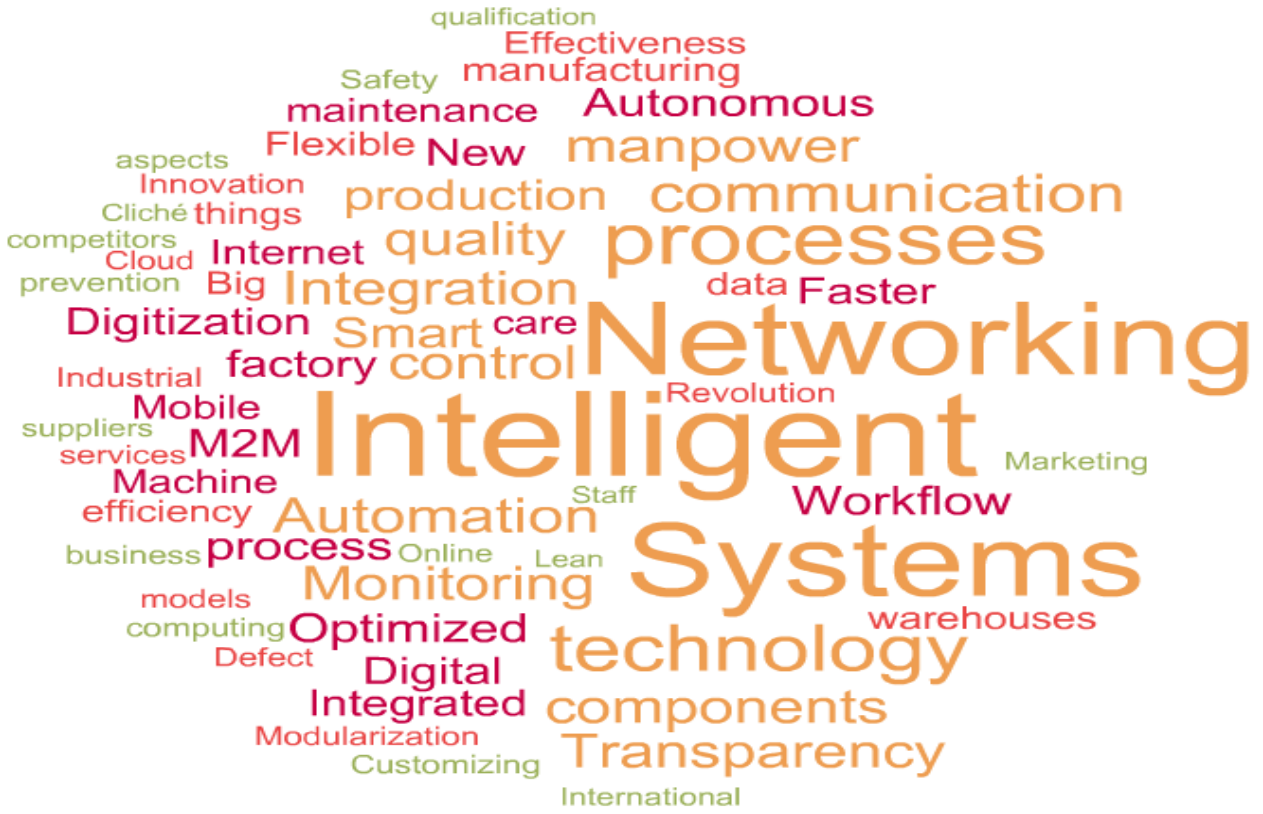
Understanding of “Industry 4.0“

“What does Industry 4.0 mean to you
(or CPS Cyber Physical Systems or M2M Machine to Machine or IOE Internet of Everything)?"

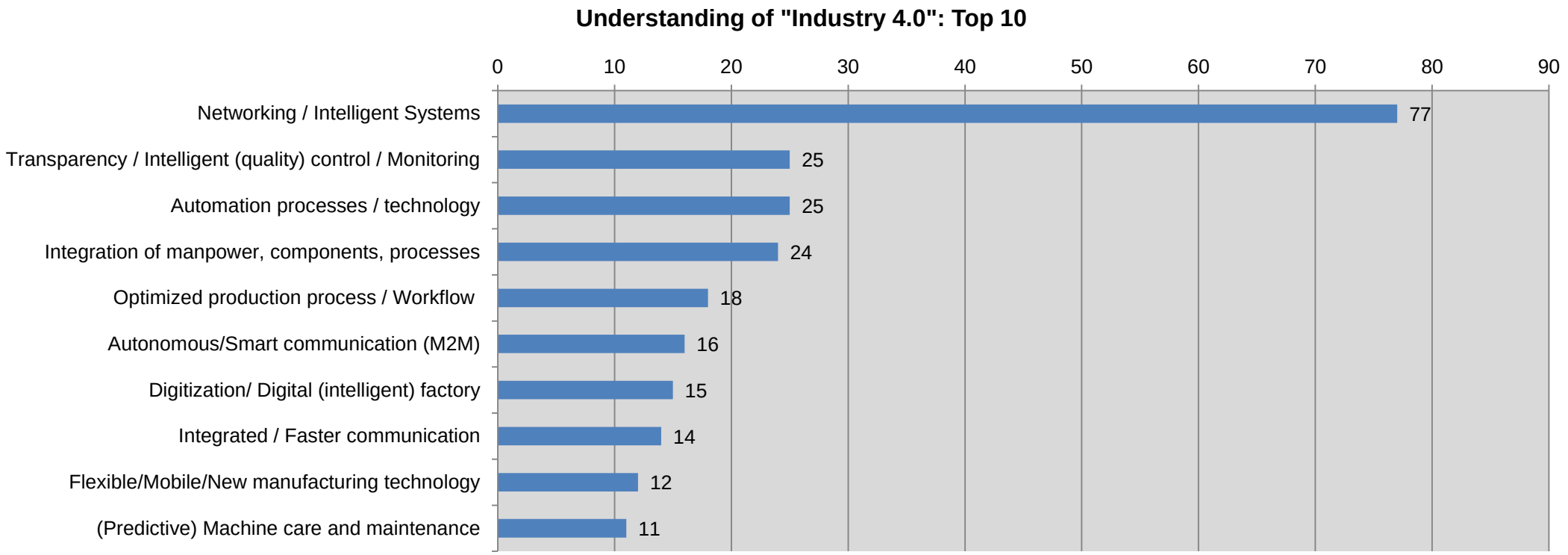


There is no common understandig of what *Industry 4.0* means. The scope ranges from "Industrial revolution“ to „cliche".
It is primarily associated with “network” and “intelligent systems“

Q2 What does Industry 4.0 mean to you (or CPS – Cyber Physical Systems or M2M – Machine to Machine or IOE – Internet of Everything)?

Understanding of “Industry 4.0"

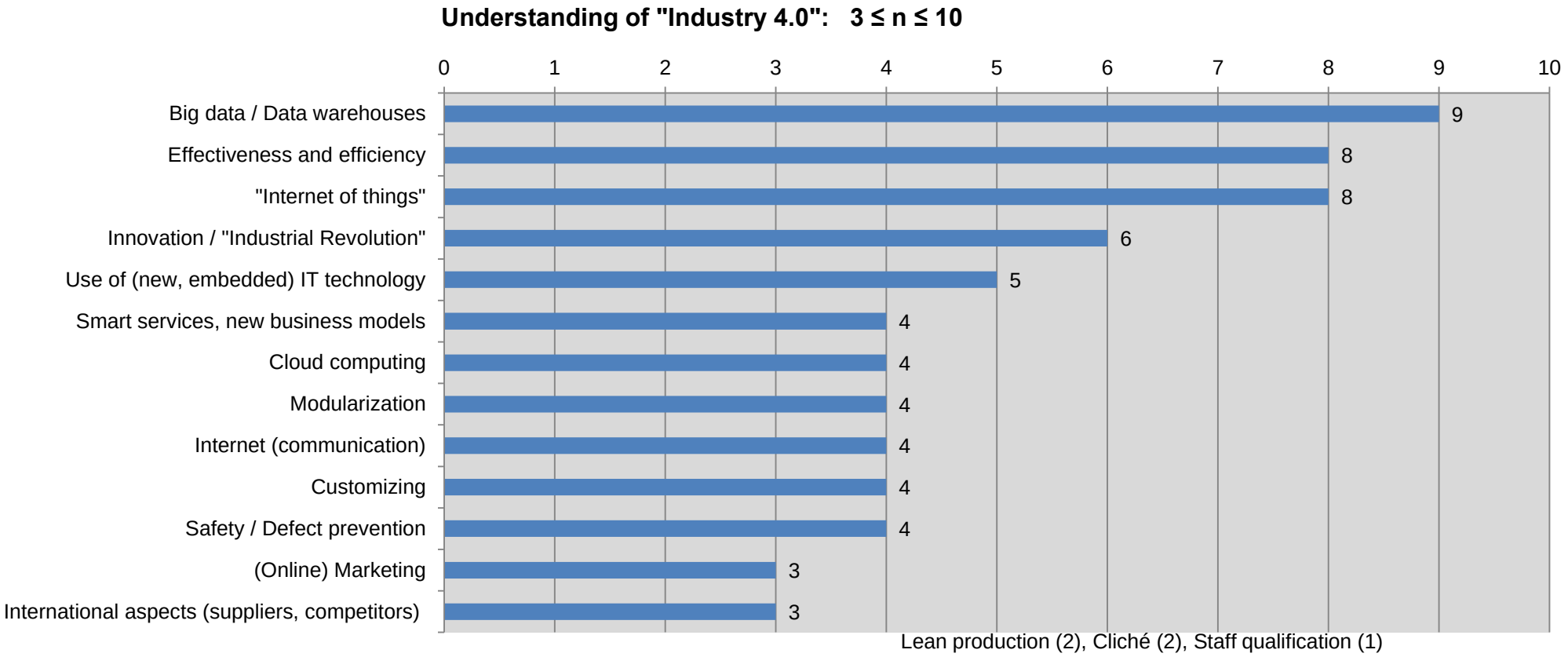
In comparison with the other TÜV Rheinland surveys on *Industry 4.0* “networking/intelligent systems” has a clear production and machinery focus this time.



Q2 What does Industry 4.0 mean to you (or CPS – Cyber Physical Systems or M2M – Machine to Machine or IOE – Internet of Everything)?

Understanding of “Industry 4.0"

A lot of answers also refer to (big) data and describe a company nearly completely penetrated and controlled by IT-technology.



Q2 What does Industry 4.0 mean to you (or CPS – Cyber Physical Systems or M2M – Machine to Machine or IOE – Internet of Everything)?

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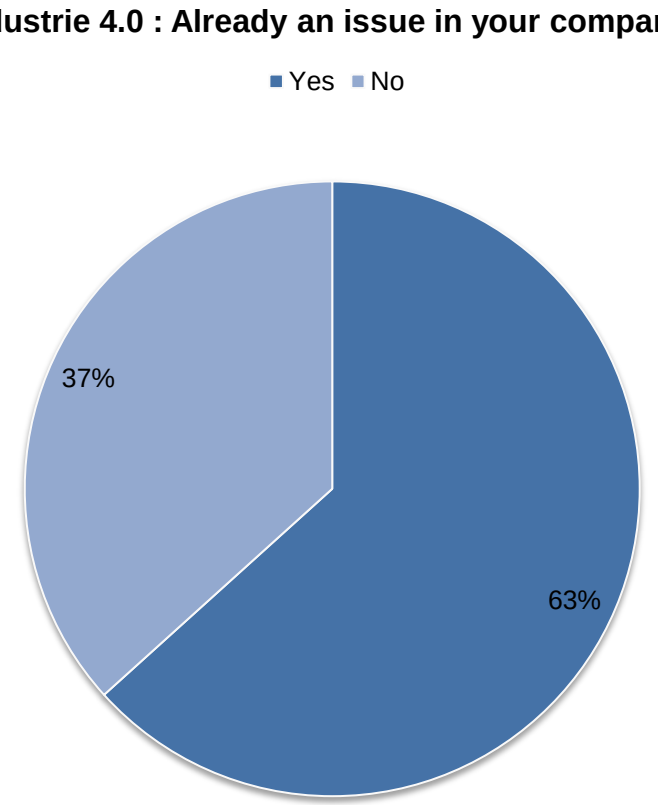
Maturity Level and Implementation

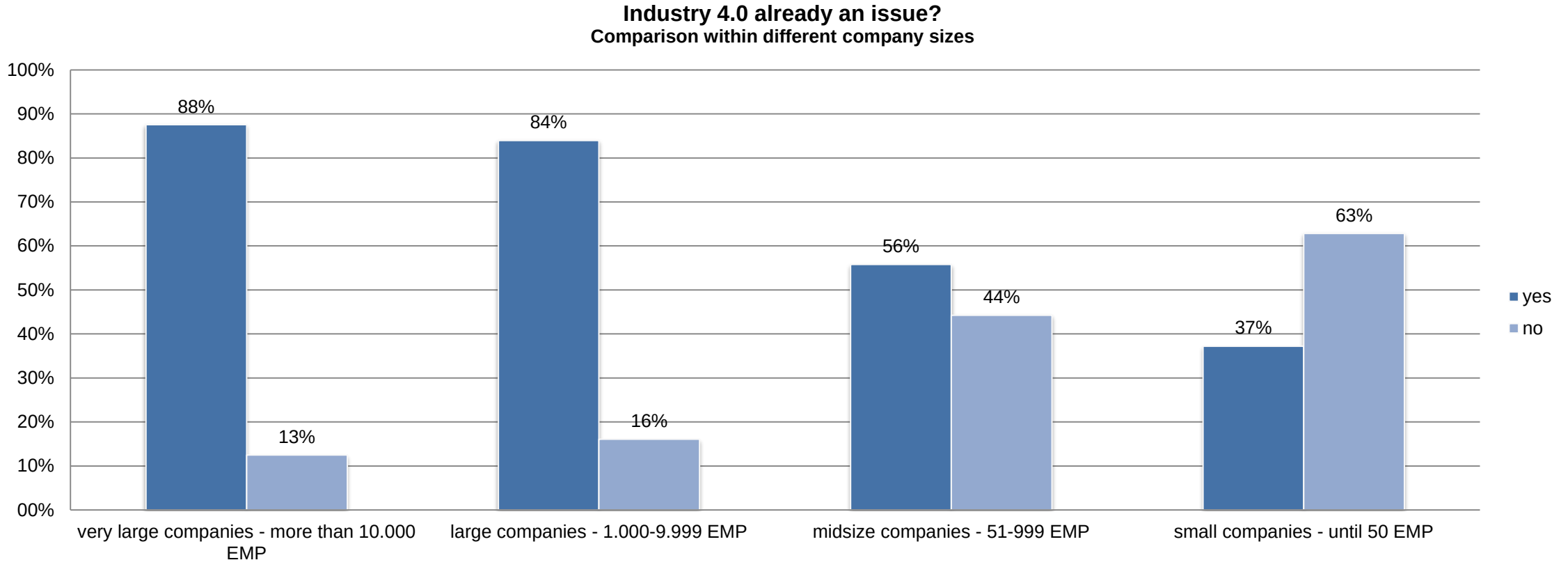
For almost two-thirds of the companies *Industry 4.0 is* already an issue.



Q1 Is Industry 4.0 already an issue in your company?

Maturity Level and Implementation

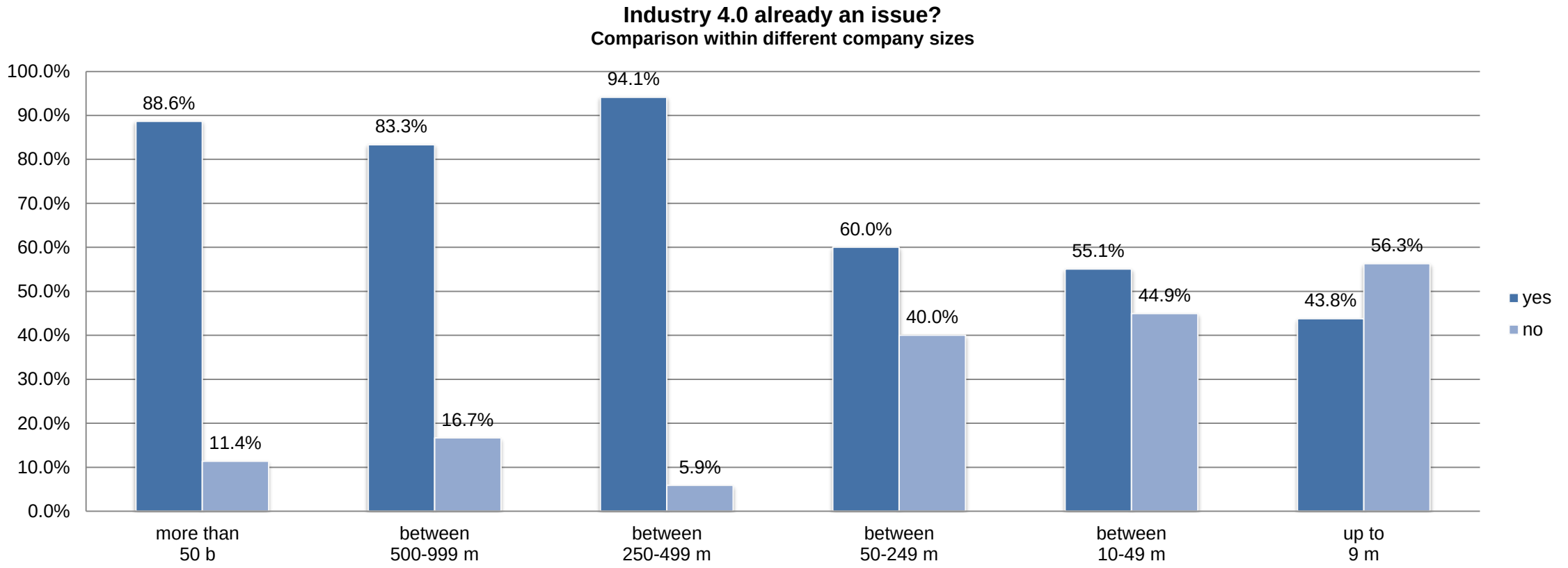
Based on the number of employees it becomes clear that *Industry 4.0* is an issue especially for large companies.



Q1 Is Industry 4.0 already an issue in your company?

Maturity Level and Implementation

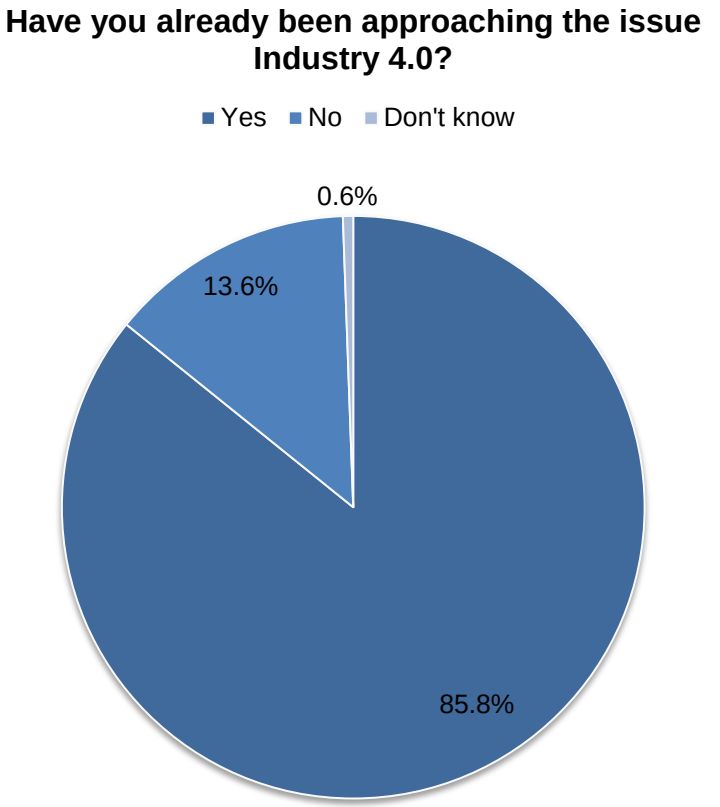
A similar picture emerges if you look at the sales figures.



Q1 Is Industry 4.0 already an issue in your company?

Maturity Level and Implementation

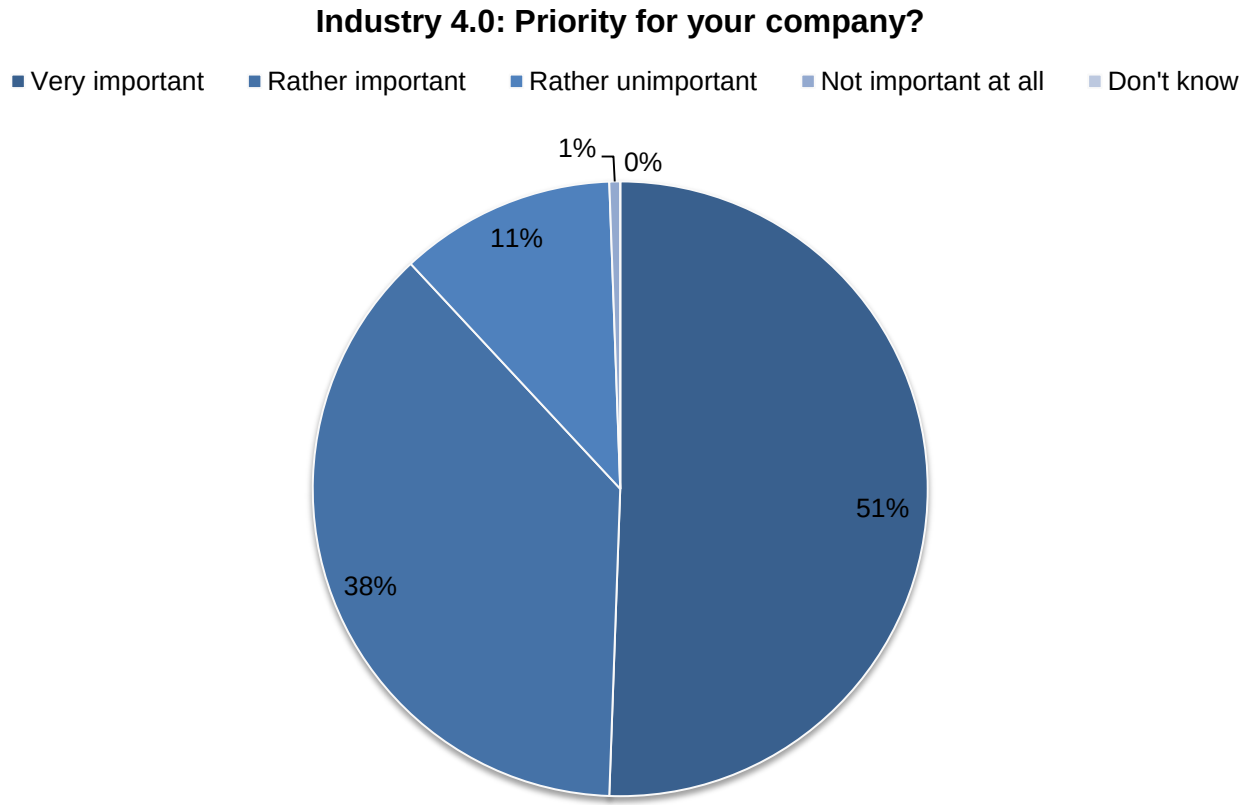
More than 80% of the respondents state that their company has already approached the issue *Industry 4.0*.



Q3 Have you already been approaching the issue Industry 4.0?

Maturity Level and Implementation

Almost 90% of the respondents state that *Industry 4.0* is very important or rather important for their company. Only for a few *Industry 4.0* is rather important or not important at all.

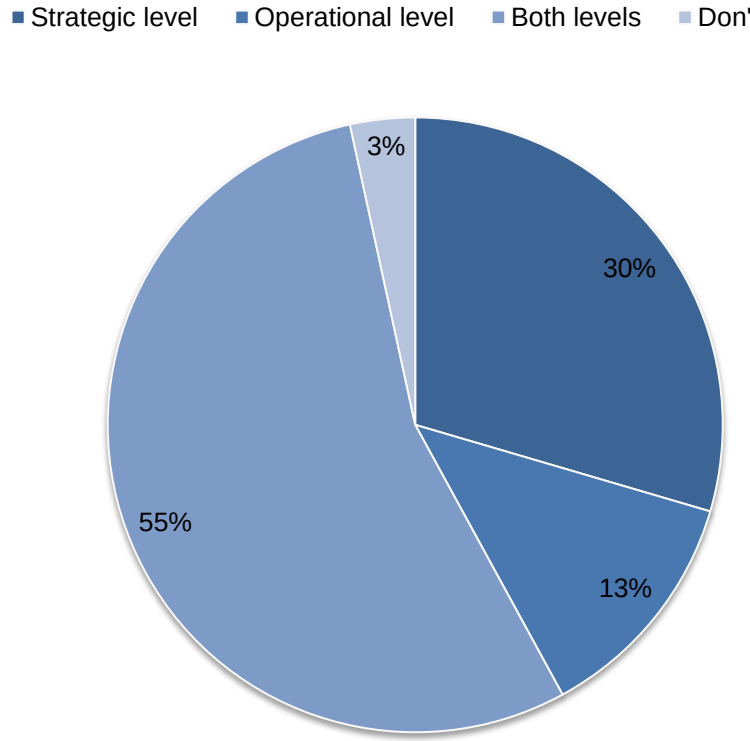


Q5.1 What priority does Industry 4.0 have for your company?

Maturity Level and Implementation

Industry 4.0 is discussed mainly on both levels – the strategic level and the operational level.

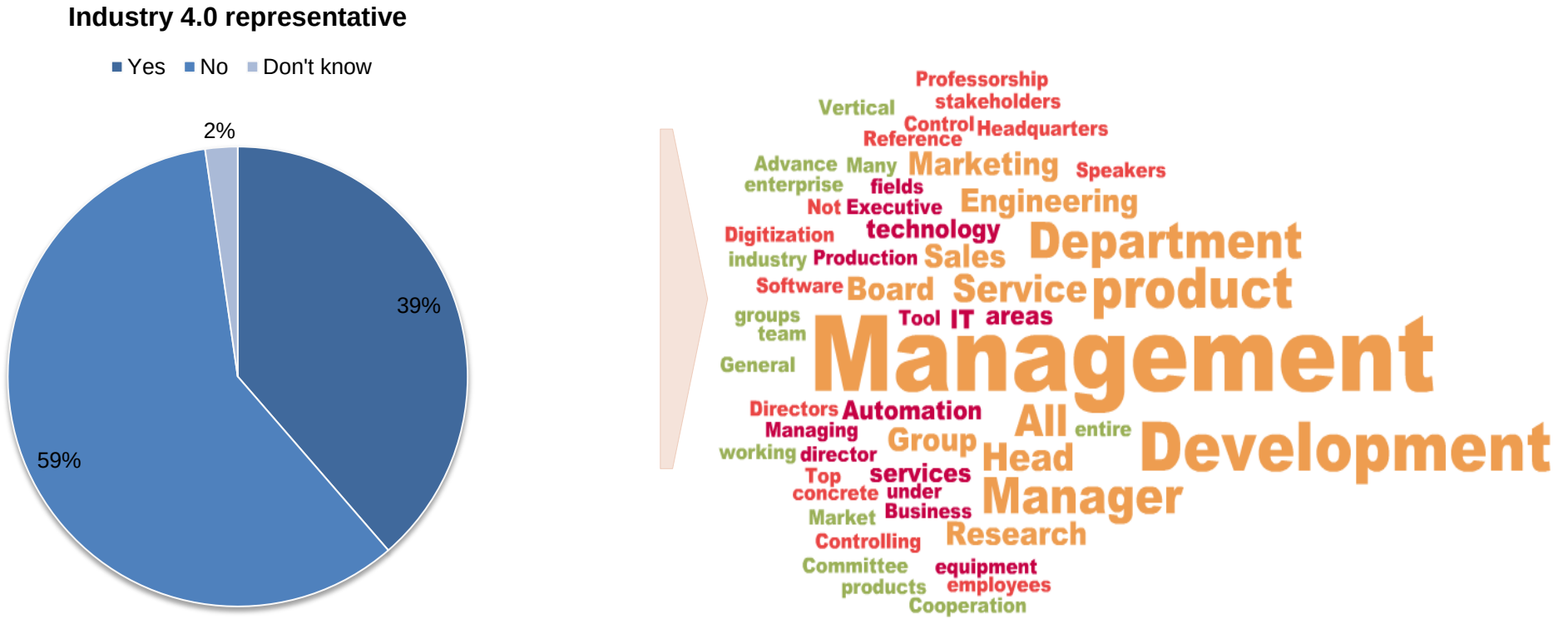
Level on which Industry 4.0 is discussed in the company



Q5.2 At which level Industry 4.0 is discussed in your company?

Maturity Level and Implementation

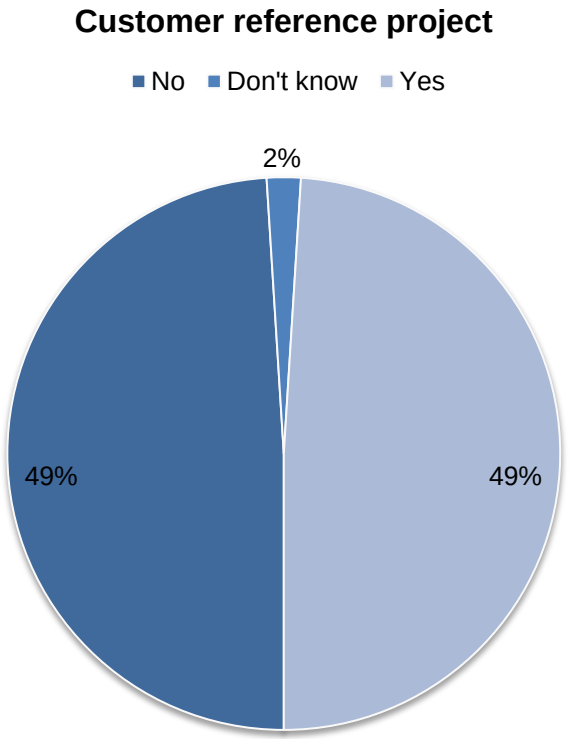
Almost 40% of the respondents state that they already have an *Industry 4.0* representative who is organizationally located at different positions ranging from “sales” to “management board”.



Q6 Does your company have an Industry 4.0 representative?

Maturity Level and Implementation

Nearly 50 % of the respondents have already executed customer reference projects.



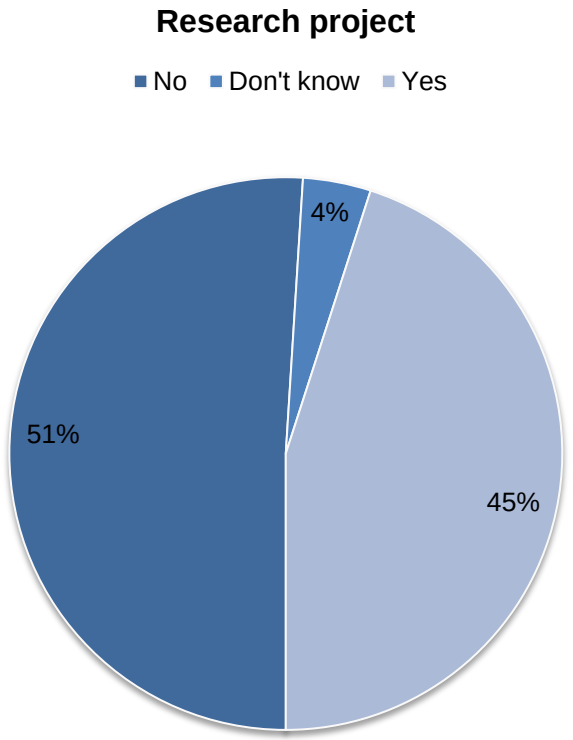
For example the topics:

- Energy management
- Sensor/sensor data analysis
- Logistic
- Automation
- Machine-to-machine communication

Q4.1 You have already been approaching the issue Industry 4.0. Which are/were the first steps? With a customer-reference-project?

Maturity Level and Implementation

45 % of the respondent companies have already realized research projects.



For example the topics:

-It‘s OWL (research project OstWestfalenLippe)

-In cooperation with universities

-Augmented reality

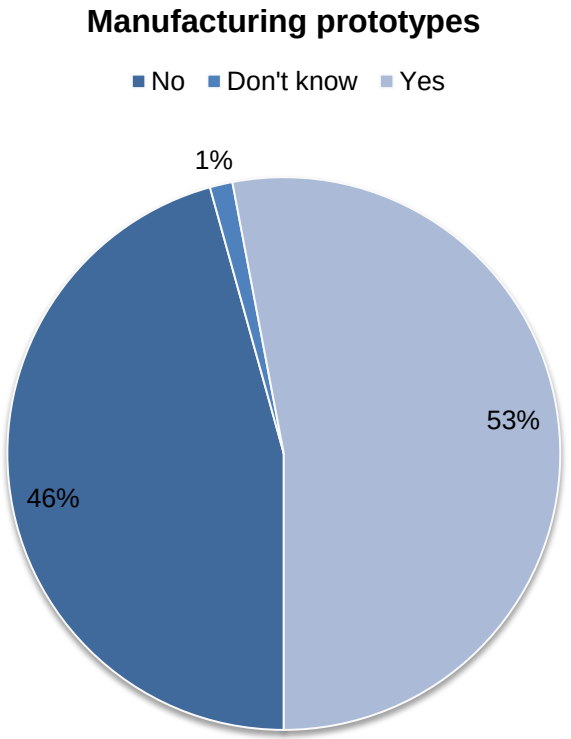
-Smart factory

-Robotics

Q4.2 You have already been approaching the issue Industry 4.0. Which are/were the first steps? With a research-project?

Maturity Level and Implementation

More than 50% of the respondent companies have already started with manufacturing prototypes.



For example the topics:

-Smart connectivity

-Robotics

-Machine-to-machine communication

-Smart devices

-Sensor data technologies

Q4.3 You have already been approaching the issue Industry 4.0. Which are/were the first steps? With manufacturing prototypes?

Maturity Level and Implementation

Projects have also been realized in other areas.
(original comments)

- General product development
- Requirement-oriented systems engineering, concepts of education and training
- Necessary software equipment, interfaces
- Automation of production processes
- Networking departments, computer software
- System solutions are monitored online ("Condition monitoring")
- Digital enterprise software suite
- Digital factory (for many years)
- Development of an MES system
- Committee work
- Establishment of an associations platform
- Intelligent tool management

- No more prototypes, but serial production, compressed air
- Meet customer requirements / customizing
- Networking machines and data (System "kimos")
- New development of thermostats
- Project for remote data transmission
- Smart factory, flexible production organization
- Software for networking, initial phase
- Software optimization for customers, dealing with big data
- Monitoring of compressed air systems in Germany
- Networking products and communication

Q4.4 You have already been approaching the issue Industry 4.0. Which are/were the first steps? Other (optional)?

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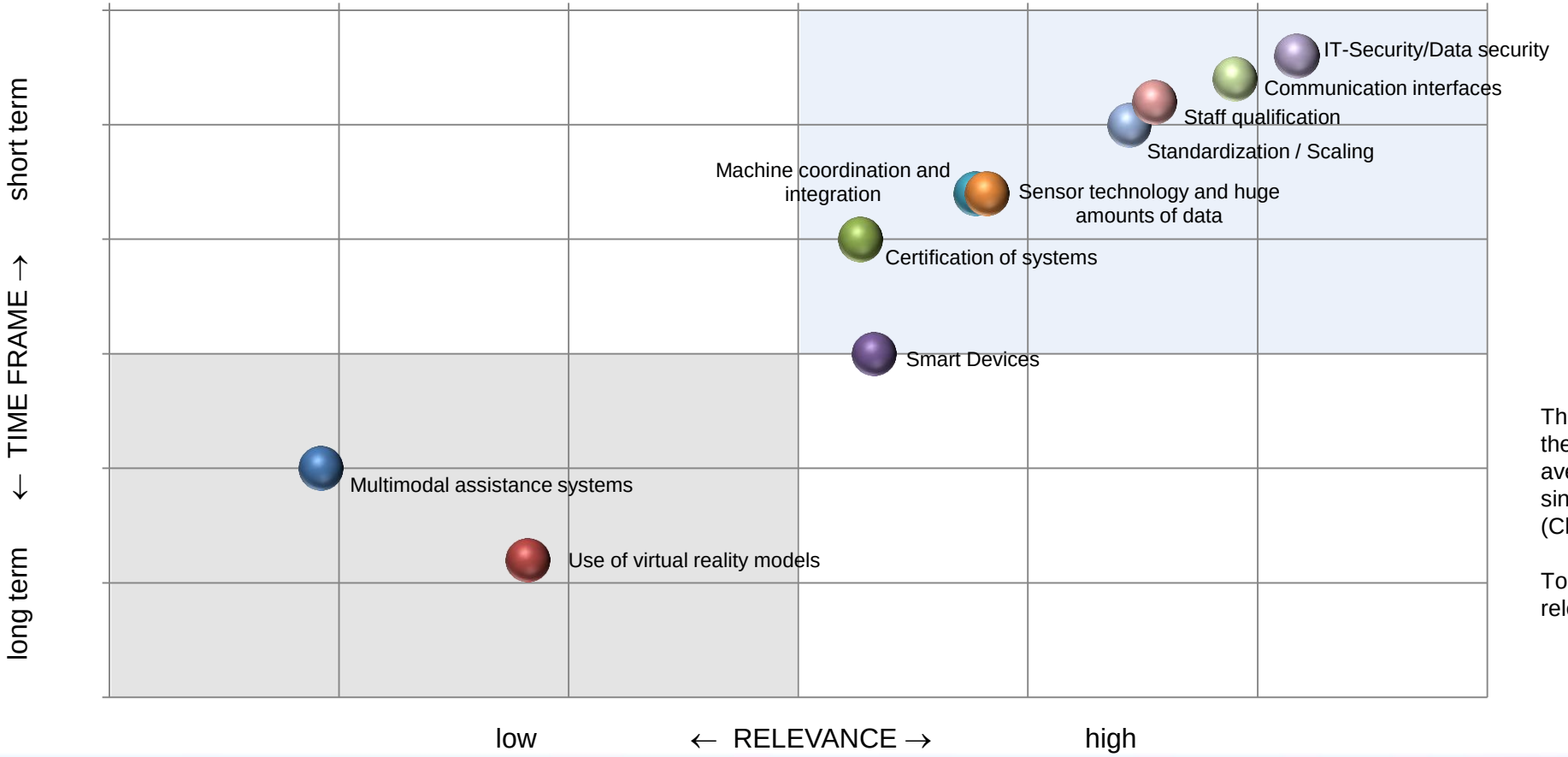
Top Priority Issues of Industry 4.0 and Detailed Information

The top priority topics regarding *Industry 4.0* are **IT-security/data security**, **communication interfaces** and **staff qualification**. **multimodal assistance systems** and **use of virtual reality models** are only rated with lower priority.



This graph gives an overview of the average time frame and the average relevance regarding the single *Industry 4.0* topics. (Choice-based question)

Top priority (of highest relevance/short term).

Top Priority Issues of Industry 4.0 and Detailed Information

Detailed indications of the top 8 priority topics (extract).

Staff qualification	• (Continuos) Training • Qualification • (Long-term) Education
Sensor technology and huge amounts of data	• Big Data and analytics • Providing diagnostic data • Exchange information
IT-Security/Data security	• Protection against cyber attacks • Protection against external access • Security of networking
Certification of systems	• European norms are important for products • Specific customer requirements • Product-related
Communication interfaces	• Bus-interfaces/systems • Usability • Open standards
Standardization/ scaling	• Communication (of machines) • Interfaces • Diversity containment
Machine coordination and integration	• Coordination man-to-machine • Connection of sensors • Connection of systems
Smart devices	• Data & communication skills • Diagnostic systems • Security equipment

Q9.2 And which are the aspects you are especially concerned with for this topic?

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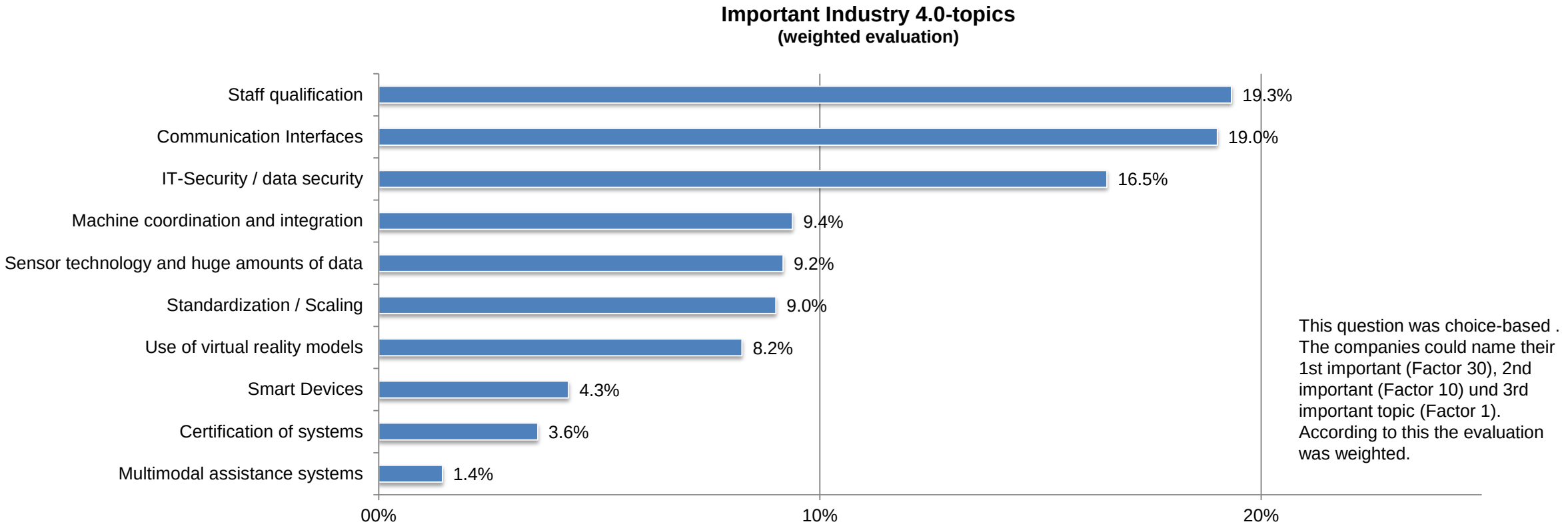
Comparison within Different Company Sizes

When we asked the respondent companies which of the 10 *Industry 4.0* topics are the most important ones for them, **staff qualification**, **communication interfaces** and **IT-security/data security** were named frequently.

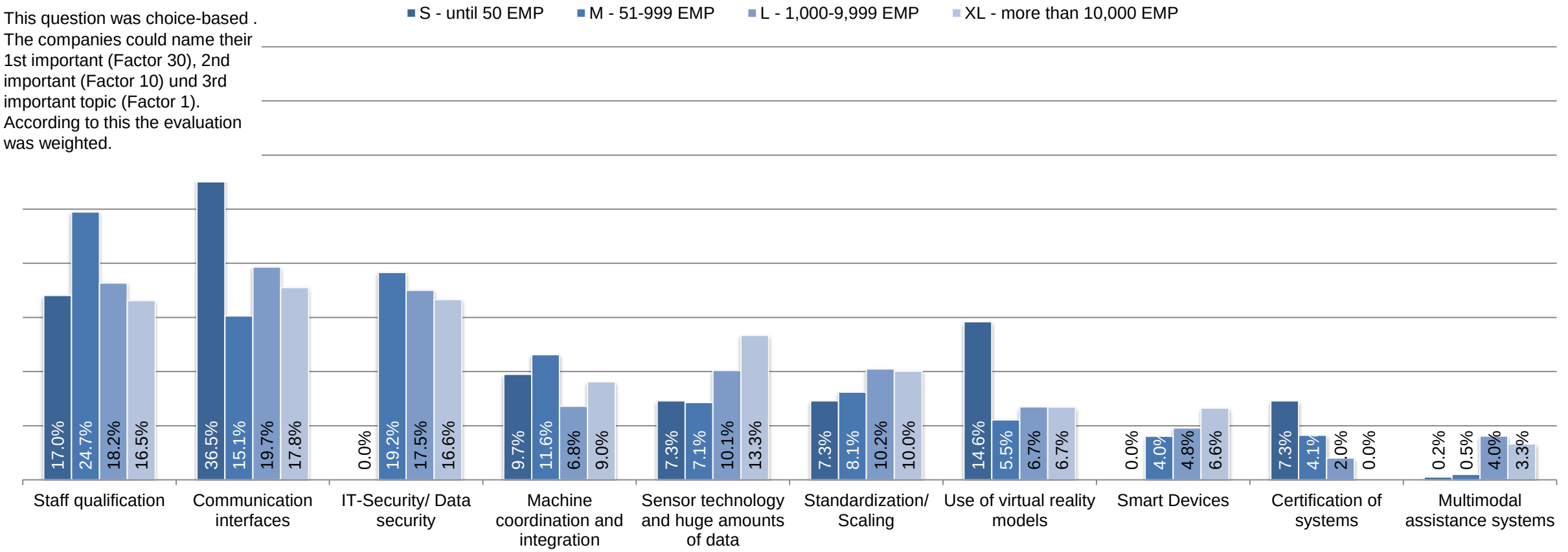


Q9.1 Which are the three topics we have just talked about that are especially important for you?

Comparison within Different Company Sizes

The evaluation of the single topics depends on the company size. Small companies evaluate these single topics differently than larger companies do. For example **IT-security/data security** is no big issue for small companies, whereas for larger companies it is.

This question was choice-based . The companies could name their 1st important (Factor 30), 2nd important (Factor 10) und 3rd important topic (Factor 1). According to this the evaluation was weighted.

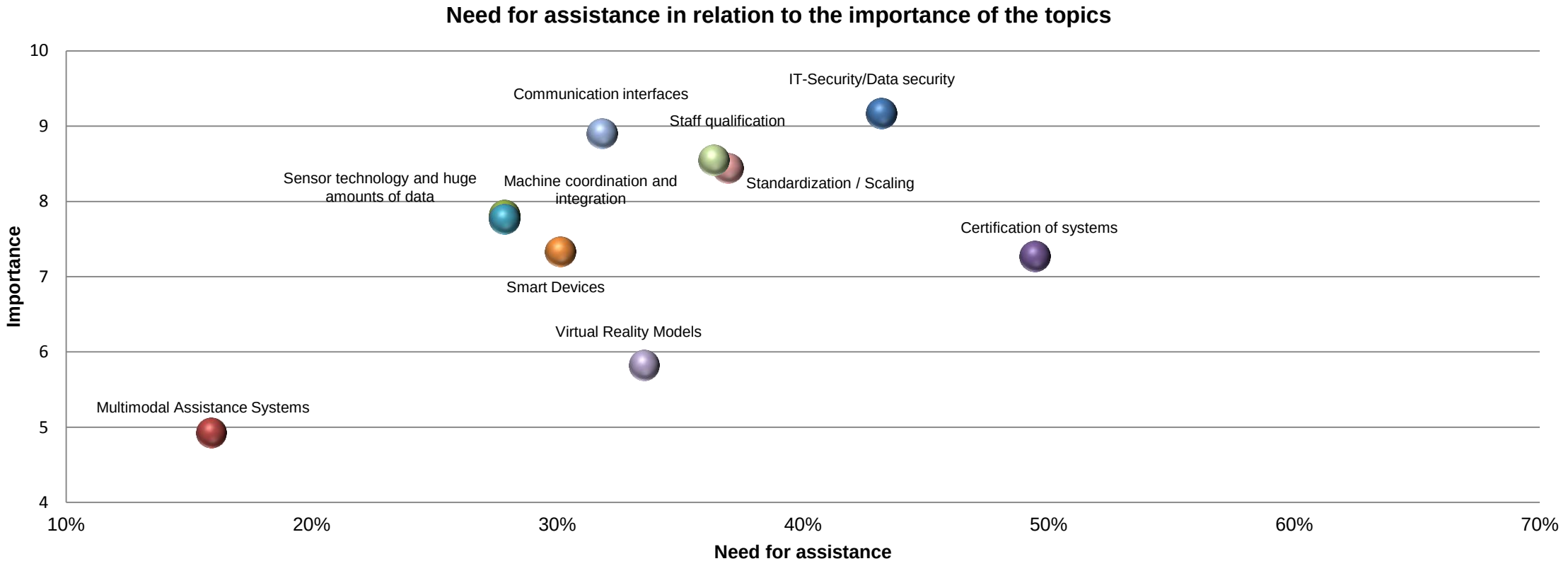


Q9.1 Which are the three topics we have just talked about that are especially important for you?

Content

Importance of Topics and Need for assistance

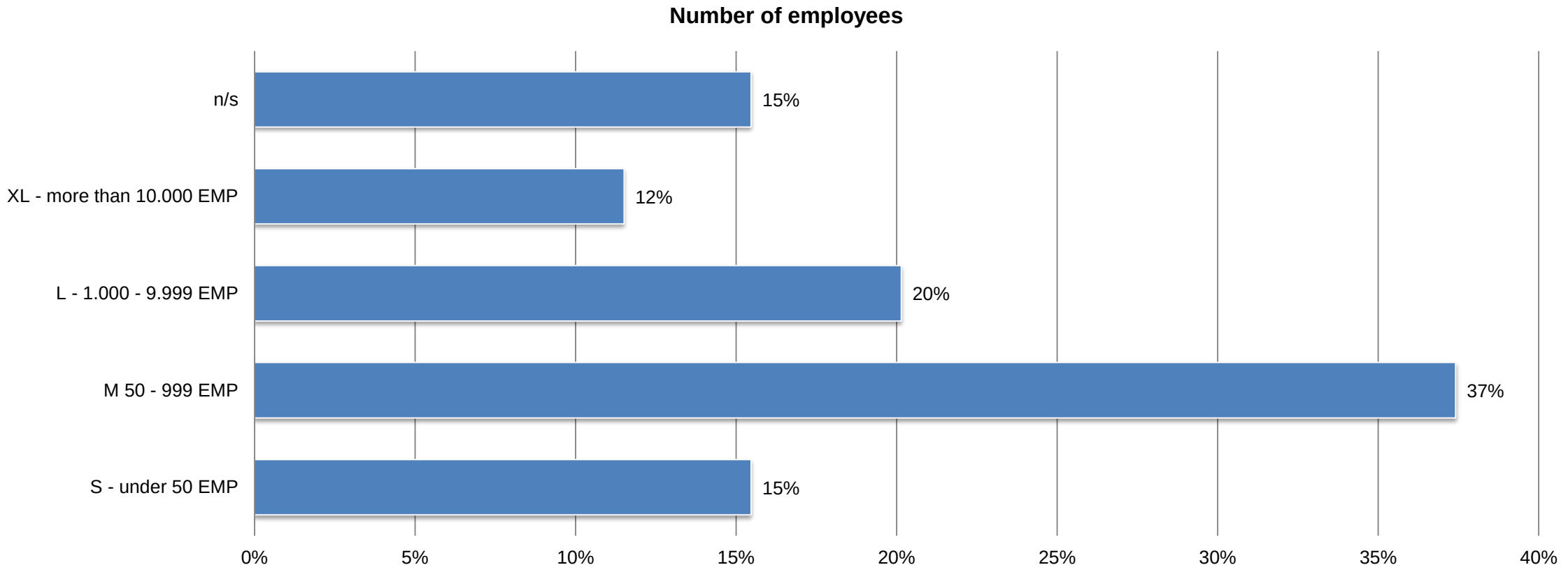
The average need for assistance regarding the top 10 Industry 4.0 topics is around 33%. IT-security/data security is the top priority topic as it is most important for the respondent companies and reveals a high need for assistance.



Content

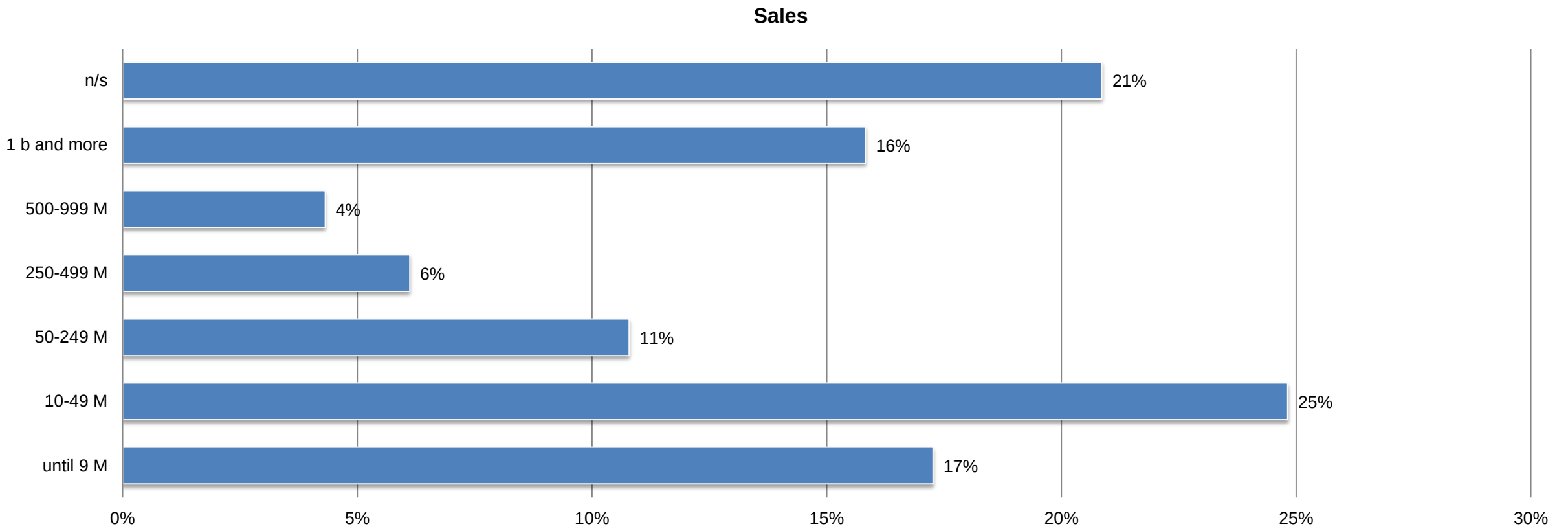
Statistics / Customer Contacts

Number of employees (all interviews)
Most respondents are midsize companies (M).



Statistics / Customer Contacts

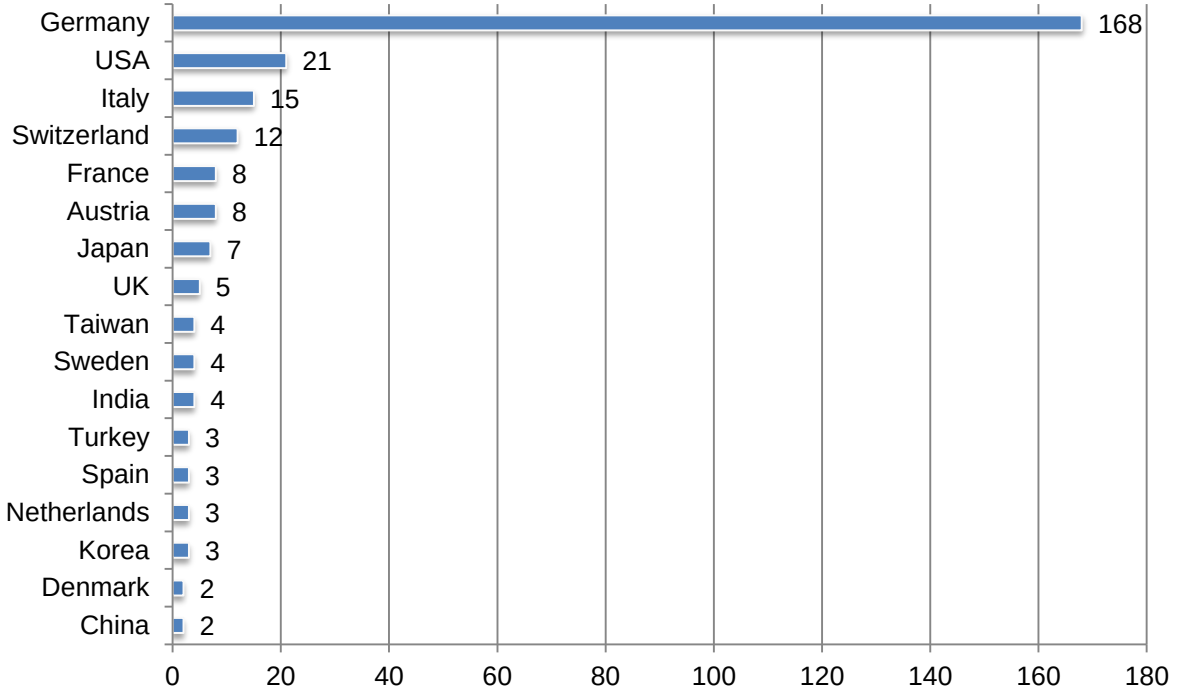
Sales (all interviews)
Concerning company sales most respondents had a turnover until 49 m €.



Statistics / Customer Contacts

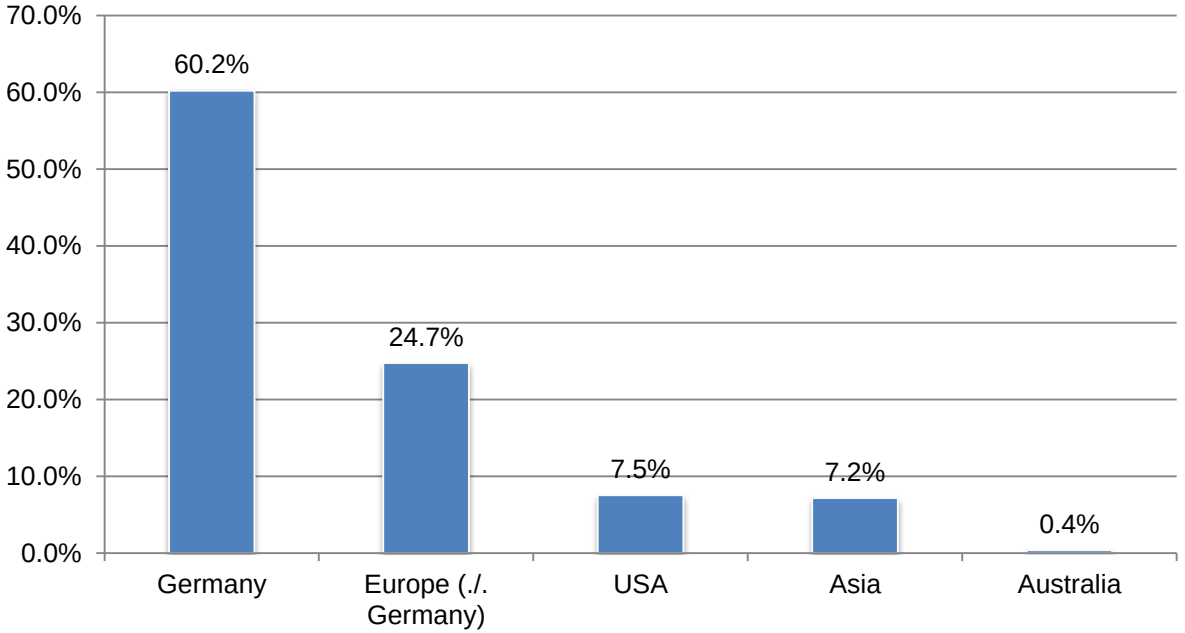
Most of the respondents have their company headquarter in Germany. In total 80% of the respondents are companies with European headquarters (incl. Germany).

Company headquarter (abs. n>1)



Others n = 1:
Australia, Belgium, Czech Republic, Latvia, Poland, Portugal, Slovakia

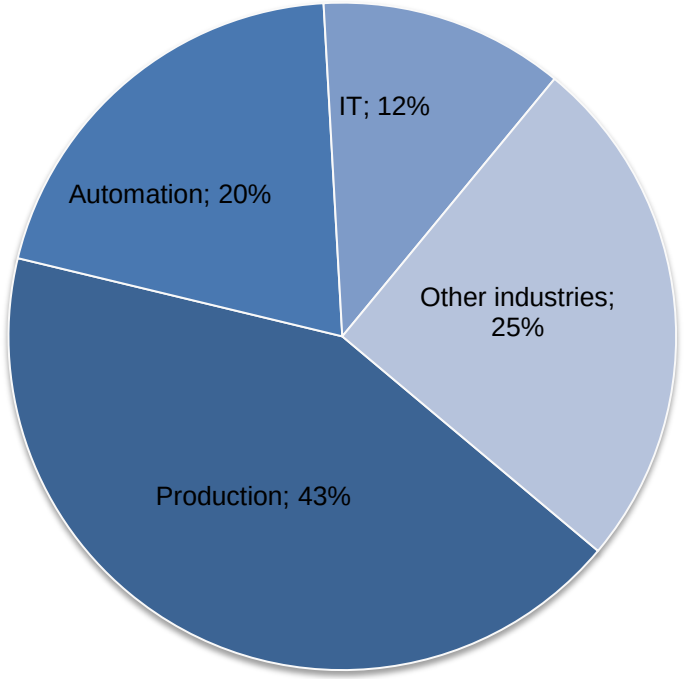
Company headquarter (cluster; %)



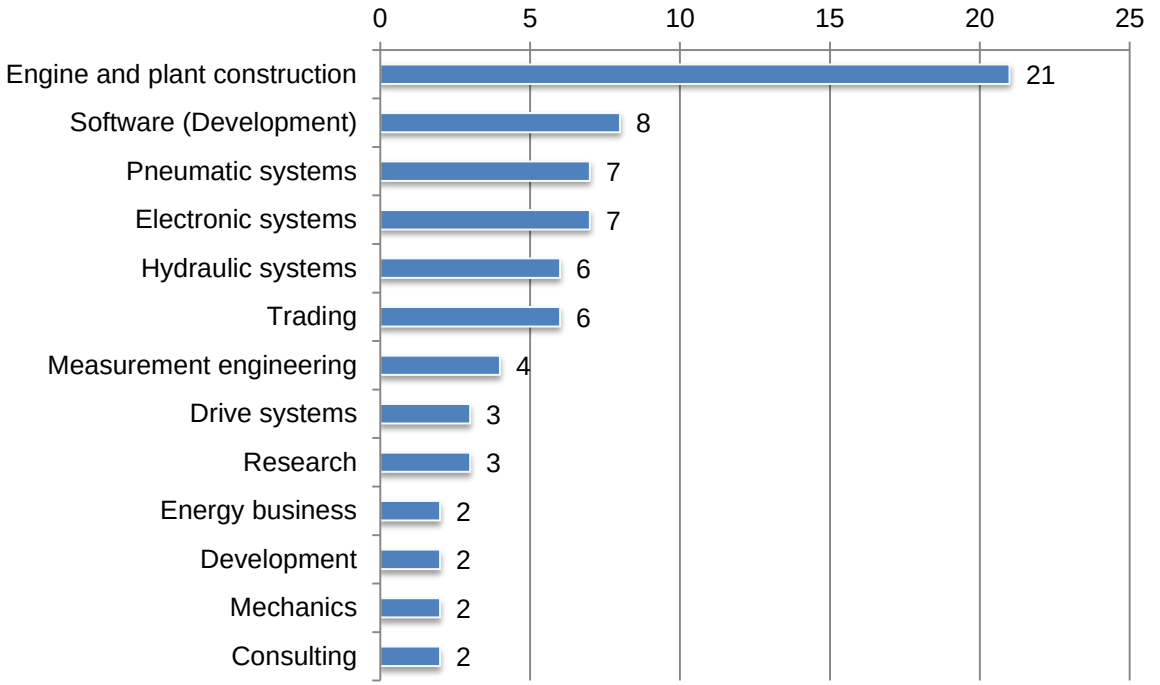
Statistics / Customer Contacts

The key activity of the respondent companies is located in the production. There are also many “special cases" (Others) included.

Company industry



Other industries (n>n)



Others (n=1):
Metal industry, Actuators & Sensors, Industrial conductivity, Industrial image processing, Automobile industry, Resell, Telecommunication, Fluid power, Protection of products, Construction, Control engineering, Industry, Compressors, Pumps & systems, Fans, Couplings, Robotics, welding installation, capital goods

Statistics / Customer Contacts

Most of the respondents state that they are working in sales.
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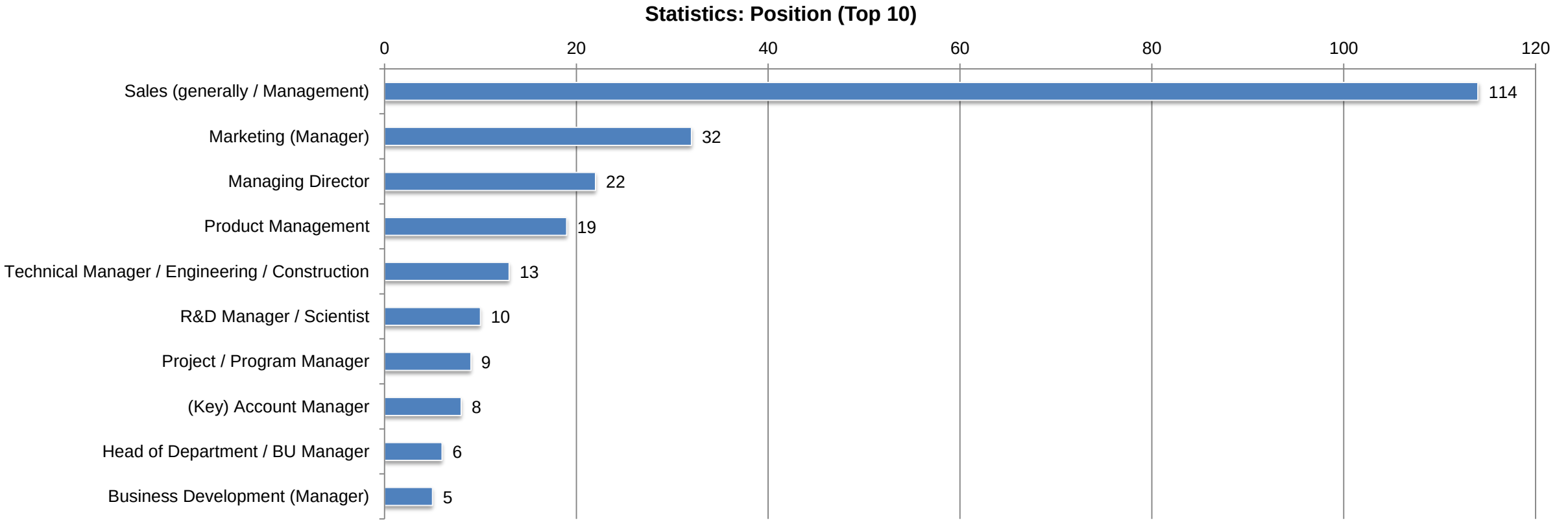
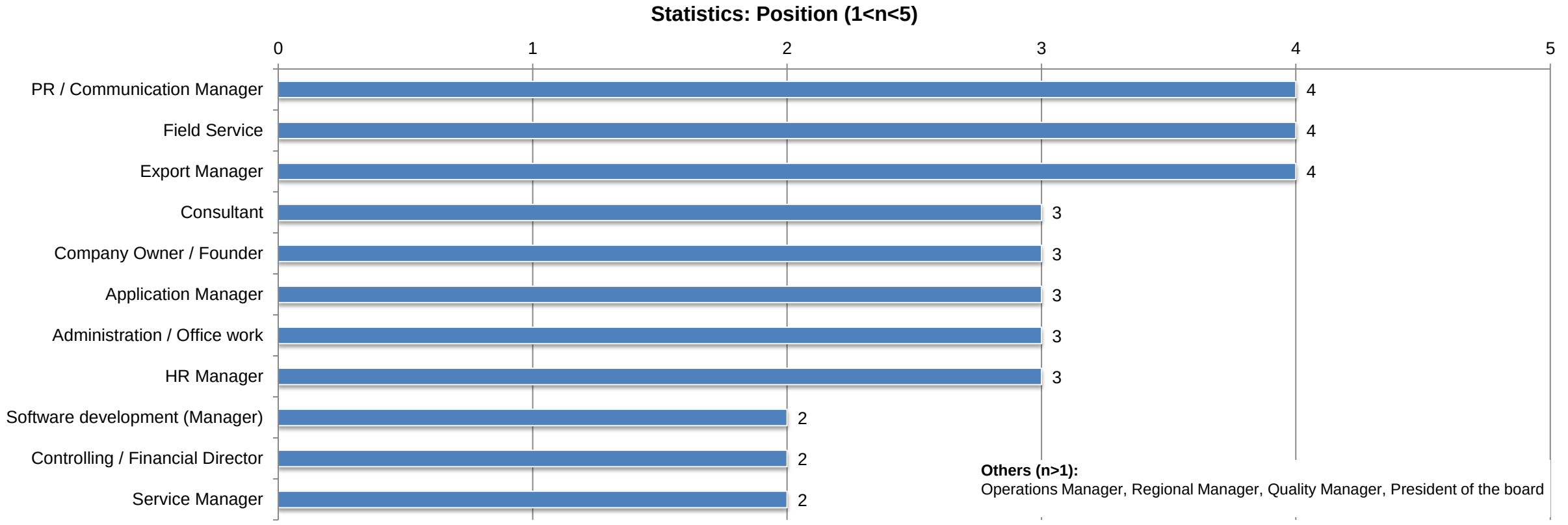


Statistics / Customer Contacts

The scope of the positions is quite broad.



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