ADA
ADVANCED DATA ANALYTICS IN BUSINESS

Co-funded by the Erasmus+ Programme of the European Union

Survey for the project "Advanced Data Analytics in Business"

We make DATA DO business for you

Prepared by Data Do
for the Serbian Association of Managers (SAM) and ADA project

April – May 2019

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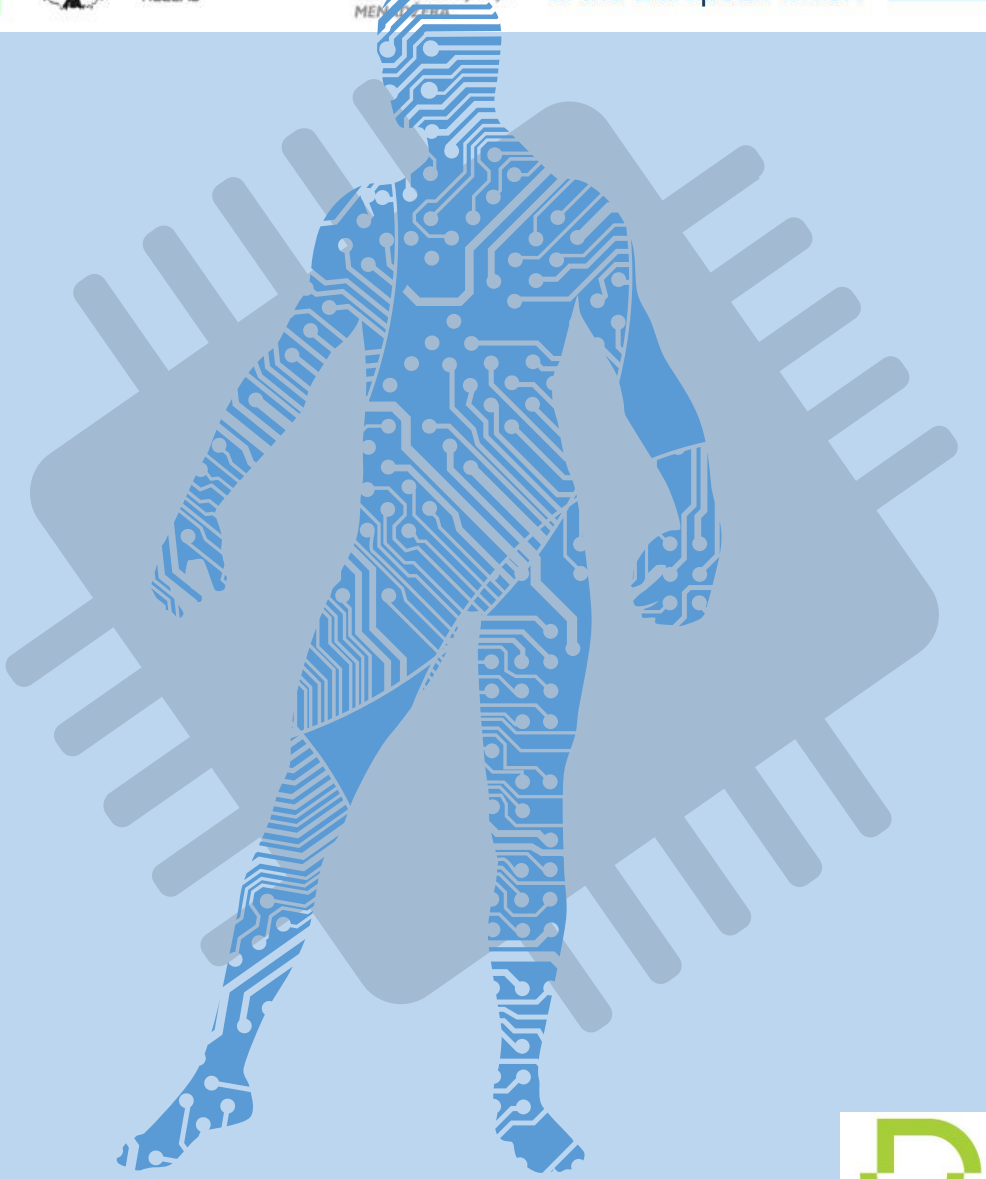

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Survey objective & partners

ERASMUS & ADA & SAM

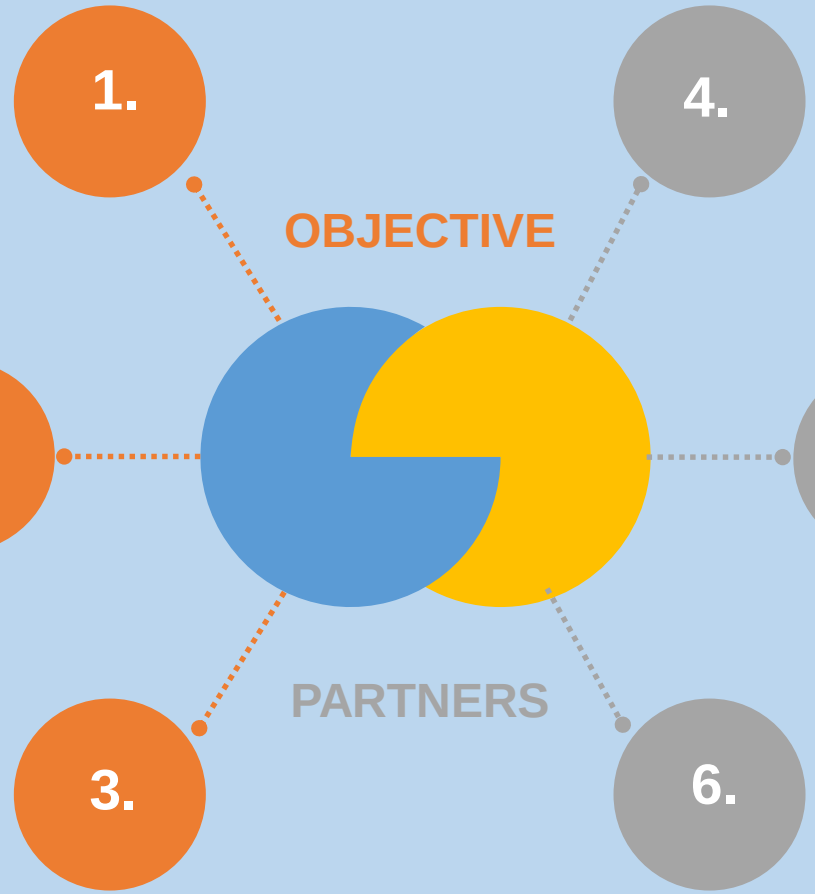
This survey is part of the ERASMUS project “Advanced Data Analytics in Business - ADA“ in which SAM is participating in partnership with 4 major universities in Serbia (the Universities of Novi Sad, Belgrade, Niš and Kragujevac) and EU partners from Cergy, Rome, Thessaloniki and Vieanna.

PROJECT FOR BUSINESSES

The project focuses on generating new experts in business analytics, whose task within companies will be to perform a wider form of data analysis (using mathematical and statistical analyses, data mining, business forecasting models, data testing, big data analysis, machine learning, text analysis, etc.).

PROJECT OBJECTIVE

Closing the current gap on the labor market and cooperating with companies with a view to developing a sustainable study program, which will be modelled on other international programs, in order to become a leading business analytics program in the Western Balkan region. A new master study program will be developed, implemented and accredited, and accompanied by versatile lifelong learning programs for experts from different spheres of the business community.



TWO PHASES OF THE SURVEY

The survey is organized in two phases. The first phase is a quantitative survey conducted on a sample of managers, who are members of SAM, to identify the companies’ development stage and understand how data scientists may fit into the current organizational structure. The second phase is a semi-structured discussion with data scientists (or their immediate superiors), which is aimed at getting more in-depth findings.

GUIDELINES FROM BUSINESSES

Based on inputs and best practices of universities in France, Greece, Austria and Italy, Serbian universities will design new methodologies, courses and master study programs in the field of data analytics, which will be available to students and staff of companies alike.

DATA DO

The surveys are conducted by DATA DO company, a member of SAM. DATA DO is a company dealing with data science use in business. Our experts boast many years of experience in working with data - they assist companies to put data to the purpose, i.e. to monetize data both internally (by optimizing internal processes using new analytics) and externally (by generating additional income through selling data that may be valuable on the data market).

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Summary

Survey of managers' (SAM members') views

Key findings

April 2019
CAWI, n=46

Processes that are already perceived as priorities in terms of use of new analytics: consumer-related insights and more precise targeting (more common in medium-sized and big companies), financial planning and analysis (more common in small companies), pricing and profitability.

Respondents assess the **use of advanced analytics** in their respective companies to be **at a rather low level**. The main **obstacle** is **the lack of understanding** as to how to apply advanced analytics.

Departments that are mainly responsible for optimal data management and improvement of business decision-making processes include those for **finance, management and business intelligence.**

Unlike more developed countries where a clear separation of data management functions is already in place, respondents (especially those from medium-sized and big companies) have listed a **broad spectrum of functions**.

Most respondents claim that, to their own knowledge and understanding, their companies **have not implemented any data science projects so far**. Those companies that have implemented them have used **internal resources** to do so.

Respondents **have average awareness of what a data scientist actually does. One in five companies employs** data scientists. Respondents mostly **don't know whether they are going to employ new data scientists** within the next year or so.

Data scientists work in different departments. This definitely **makes training adjustments much more difficult.** Apart from communication skills, managers believe that **knowledge of industry and business knowledge** are very important skills.

What representatives of companies currently **value more is output creation and visualization rather than the process** of reaching outputs (probably due to a low level of knowledge of techniques that data scientists can utilize).

Knowledge and skills which are important **for Data scientist to have today and to be an expert in, are:**

- data analytics,
- statistics & algebra,
- data visualization,
- descriptive analysis (transforming data into information),
- to be open towards cooperation with domain experts,
- to work with advance tools,
- to understand data,
- to recognize business problem,
- to shape data,
- to understand basics of strategy and financing,
- to communicate with other sectors and
- to have experience.

Summary – part II

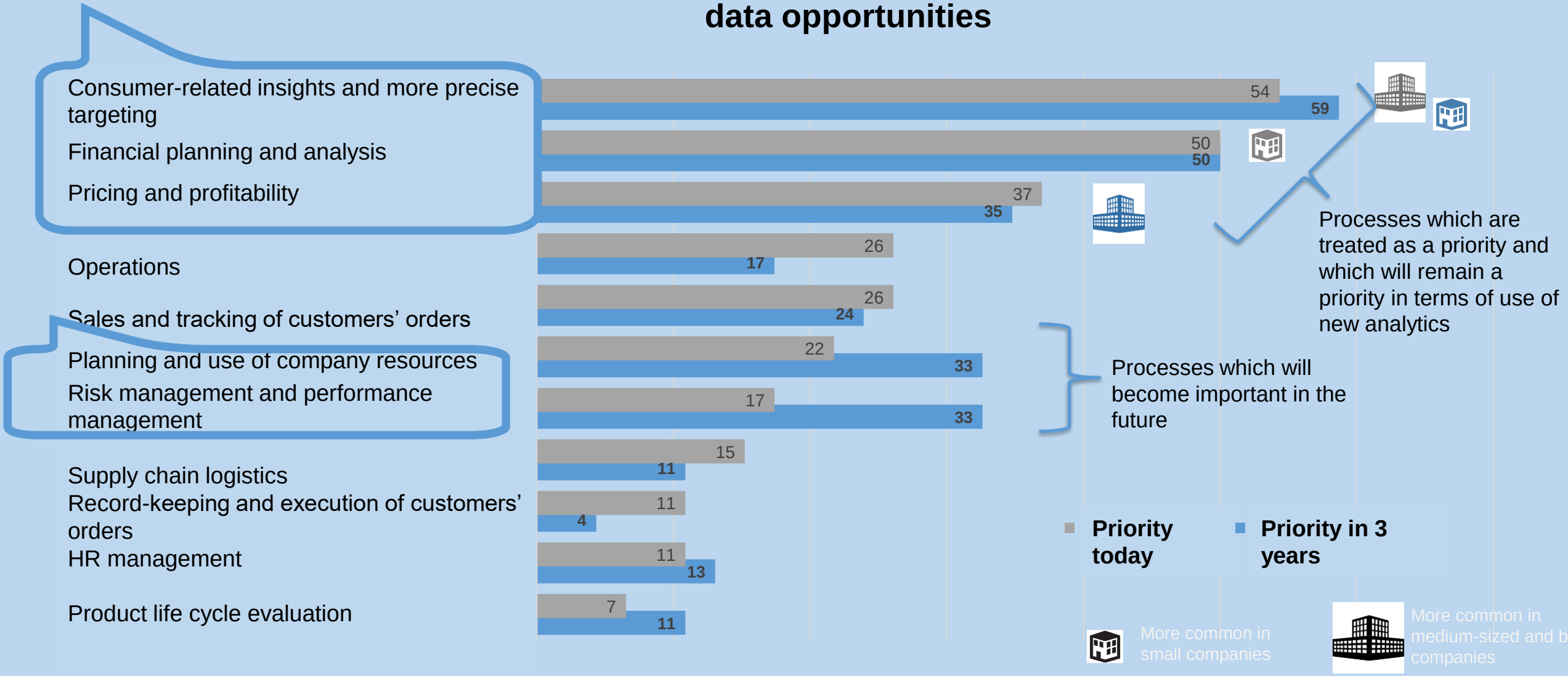
Survey among technical / expert professionals

(May 2019, n=12)

One knowledge which is **particularly important is understanding business processes,** which allows Data scientist to participate in designing them thru defining data that those processes create, as well as IoT and machine learning.

Things which Data scientist **does not need to know excellently**, but does need to understand, is architecture of data and work with data bases (not only to administrate them).

Processes which are treated as a priority in terms of use of new analytics driven by big data opportunities

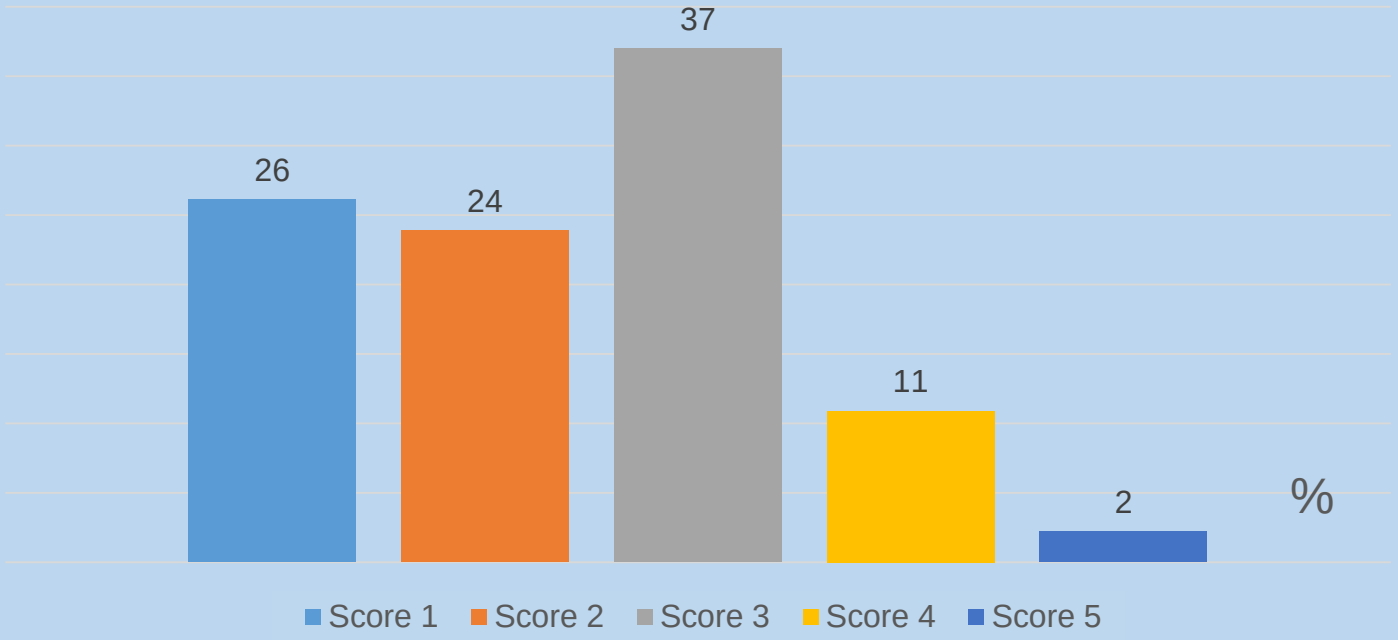


Q1 & Q2 In your opinion, which of the following processes in your company have priority with respect to the use of new advanced analytics based on big data opportunities? Which of these processes will have priority in the next 3 years; n=46 managers, SAM members; %

Use of advanced analytics

2.4

Average score

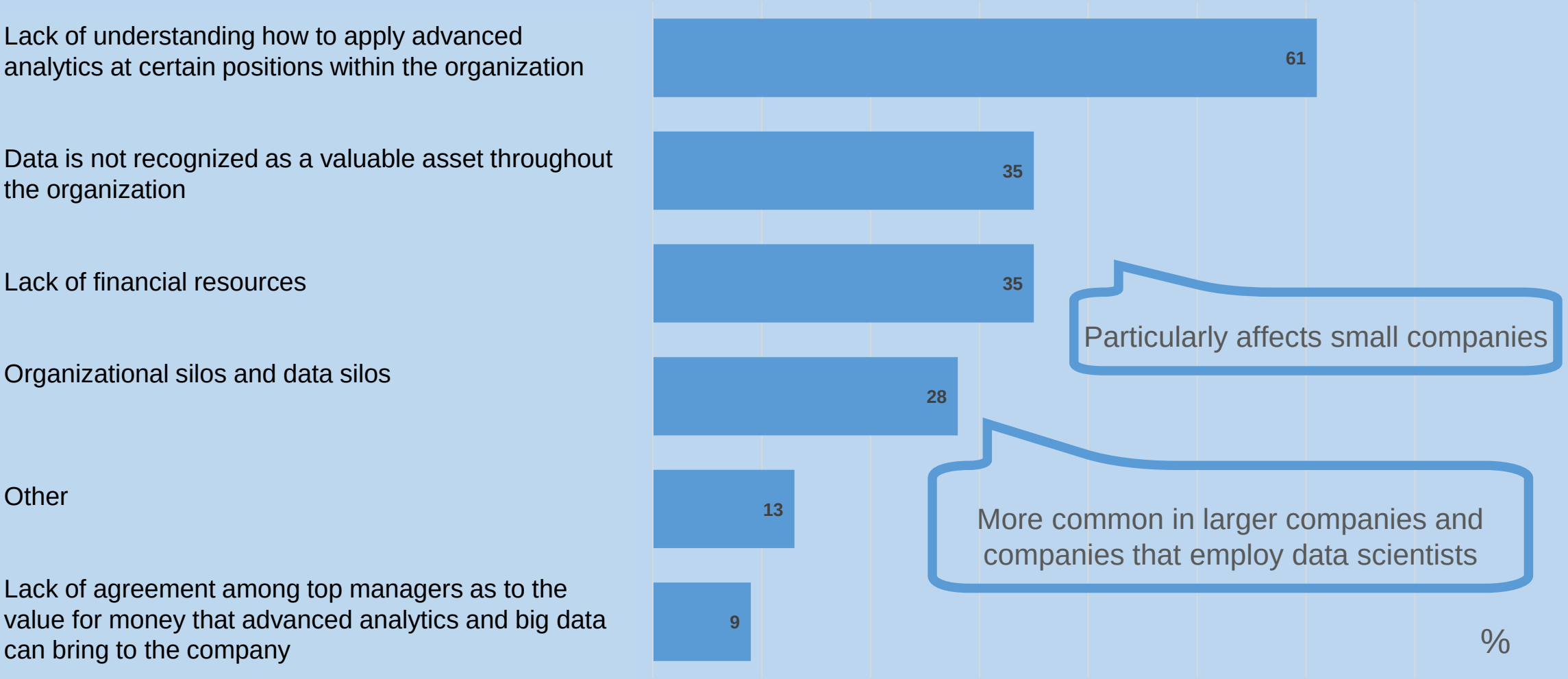


Representatives of companies have assessed the use of advanced analytics to be at a very low level

One in 4 companies has still not started using advanced analytics. Larger companies, foreign owned companies and companies which are also active on foreign markets are more advanced in this regard

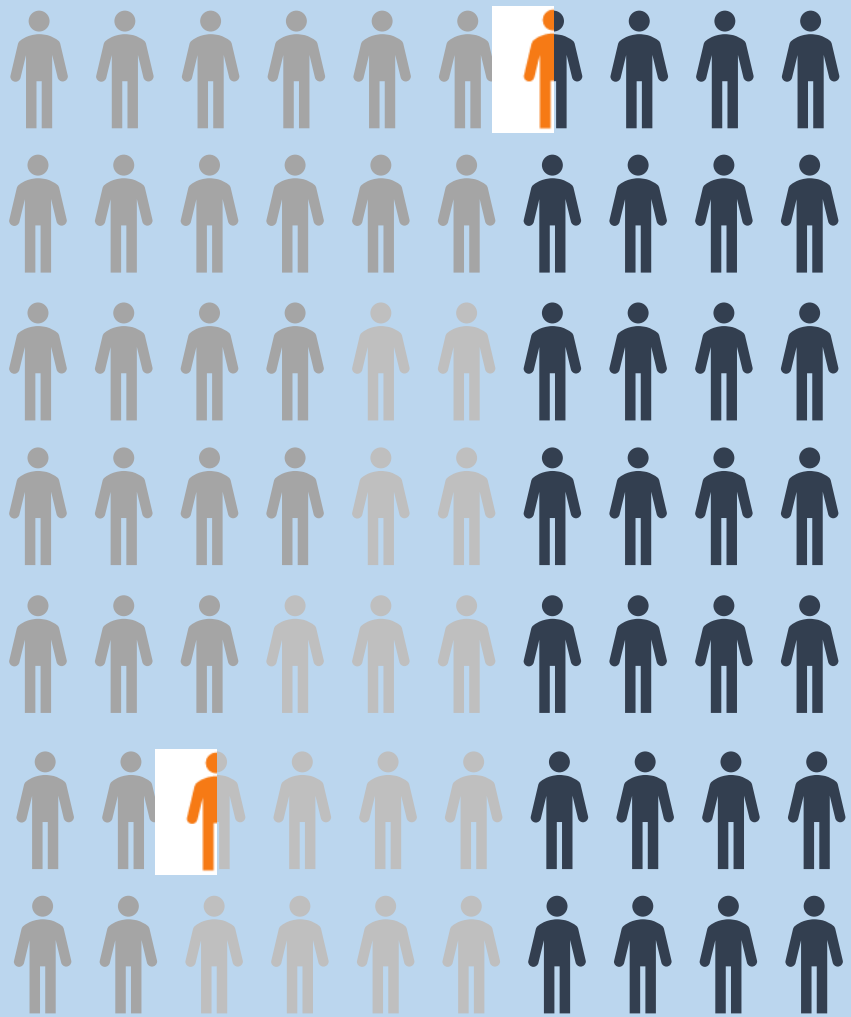
Q2x3 [Please select an answer from the multiple choice] How do you assess the current use of advanced data analytics based on big data concept in your company? Please give a score on the scale of 1 to 5; the score of 1 meaning that the company has not started using it yet; and the score of 5 meaning very advanced use.

Obstacles to use of advanced analytics



Q2x4 In your opinion, what are the key obstacles to greater use of advanced analytics based on the big data concept by your organization? Please choose up to three answers.

Details of use of data and advanced analytics systems



Data is a key element of our strategy.	65%
We use data to create reports (graphic reports and tabular reports) or dashboards.	61%
We keep all our data in a central data repository, such as data warehouse, data lake, etc.	39%
We use online data integration tools.	39%
We use data to develop predictive models.	28%
We use Business Intelligence systems, such as Power BI, QlikView, IBM Cognos, Oracle BI, Sisence, Tableau, etc.	24%
In our company the process of data gathering and processing for the purpose of loading the data warehouse (ETL process) is fully automated.	20%

More common in companies operating on foreign markets, as well as in larger companies

13% don't know

11% do not know

More common in foreign owned companies

11% don't know

Q2x6 Please score the following statements on the scale of 1 to 5;.1 is for complete disagreement with a statement; and 5 is for complete agreement with a statement. % is top 2 boxes (i.e. the percentage of respondents who partly or completely agree with a statement)

Departments that have optimal data management and use data to improve business decision-making processes

FINANCES
MANAGEMENT
PROCUREMENT
CONTROLLING
DATA & MANAGEMENT TEAM
MARKET & INTELLIGENCE
BUSINESS & INTELLIGENCE
QUALITY
SALES
STRATEGY & INNOVATION
DEVELOPMENT

Q2_7 Which sector within your organization is responsible for optimal data management and use of data to improve business decision-making and for making data-driven business moves?

Job titles of company officers who are mainly responsible for data management and use of data to improve business-decision making processes

FINANCIAL DIRECTOR / CFO

CEO

CONTROLLER

BUSINESS ANALYTICS

CHIEF DATA SCIENTIST

NO POSITION

MARKET INTELLIGENCE MANAGER

BUSINESS INTELLIGENCE MANAGER

CRM SPECIALIST

According to a similar survey in the USA*, 65 companies on the Fortune 1000 list have clearly separated two positions: Chief Data (Analytics) Officer and Chief Information Officer.

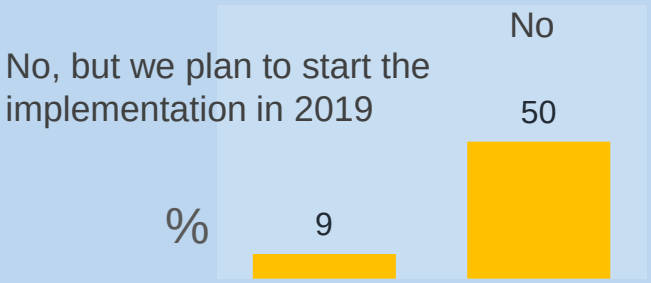
In smaller companies CEOs usually perform this role, whereas larger companies have much more diverse positions. Most of these postitions are related to finance and controlling.

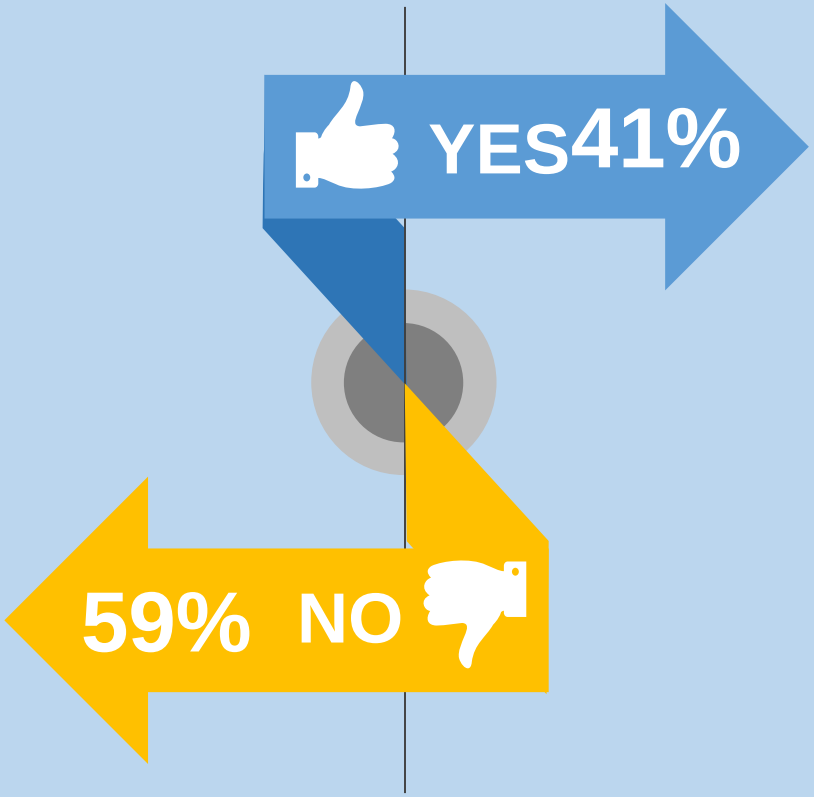
Q2_8 What is a job title of the officer in your organization who is (mmainly or more than other officers) responsible for optimal data managment and use of data to improve business decision-making processes and for makeing data-driven business moves?

Data science project implementation in companies

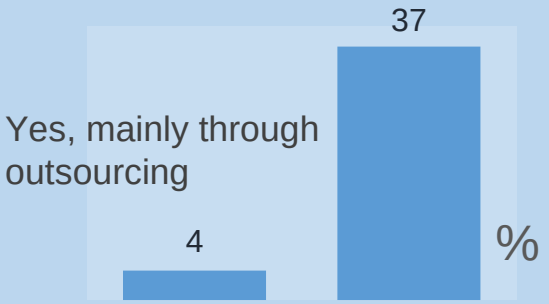
Have not implemented it

More often the case with small, locally owned companies





Yes, mainly in-house implementation



Have implemented it

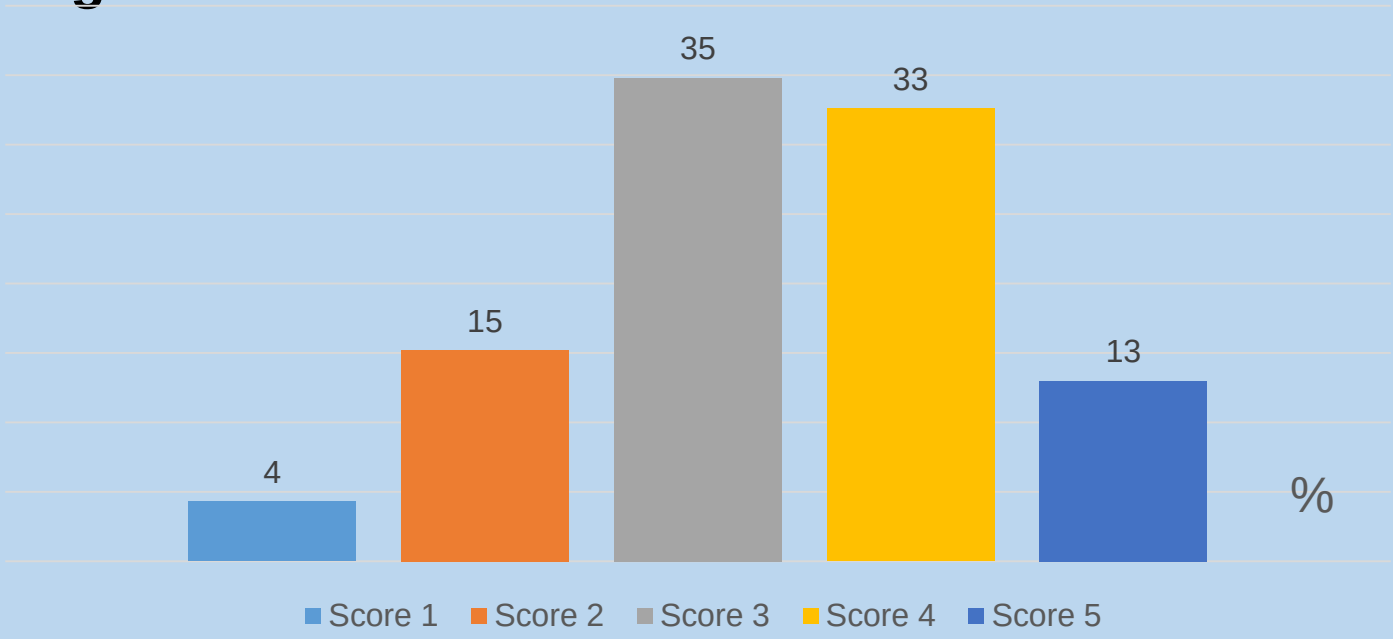
More often the case with medium-sized and larger, foreign owned companies

Q3_2 Has your company implemented any data science projects? Please select one of the multiple choice answers. n=46

Respondents' own awareness of data scientist's place and role in the organization

3.3

Average score



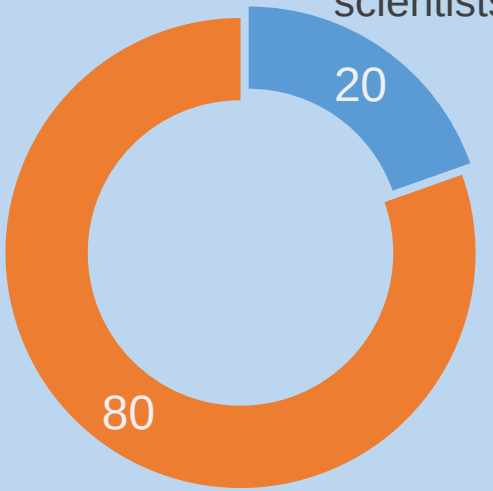
There is an average awareness of what a data scientist does – companies need to be trained on the role of data scientists

Medium-sized and larger companies, foreign owned companies and companies which are also active on foreign markets are more aware of the place and role that data scientists may have in a company

Q3_1 On the scale of 1 to 5, please score your own awareness of the place and role that a data scientist may have in your company? n=46
** 1 is for complete lack of awareness; 2 is for partial lack of awareness; 3 is for a neutral view, 4 is for partial awareness; and 5 is for complete awareness*

Demand for data scientists

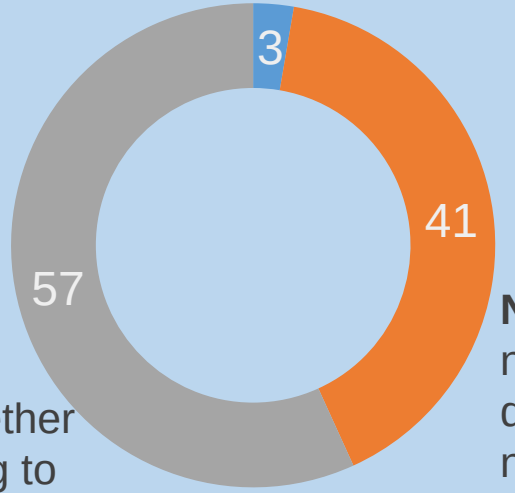
YES, my company employs data scientists



NO, my company does not employ data scientists

More often the case with companies with 50 or more employees

YES, my company intends to employ data scientists within the next year or so



NO, my company does not intend to employ data scientists within the next year or so

I DON'T KNOW whether my company is going to employ data scientists within the next year or so

Q3_3 Does your company employ data scientists? n=46
Q3_5 Do you intend to employ data scientists within the next year or so? n=37

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Departments where data scientists work

Advisory

Business Intelligence

Analytics

Pricing

Management

Operations

Sales

Business data management

HR

Technology

Program & Sales Performance Management

Controlling

Finance

Marketing

Strategic Management

Segment Management

It appears that there is no universal place (department, position) where a data scientist can work. This fact additionally complicates development of a relevant curriculum for education of future data scientists.

Q2_8 (If your company does employ data scientists) In which department(s) are they based? n=9 (Note: The sample is too small for inference)

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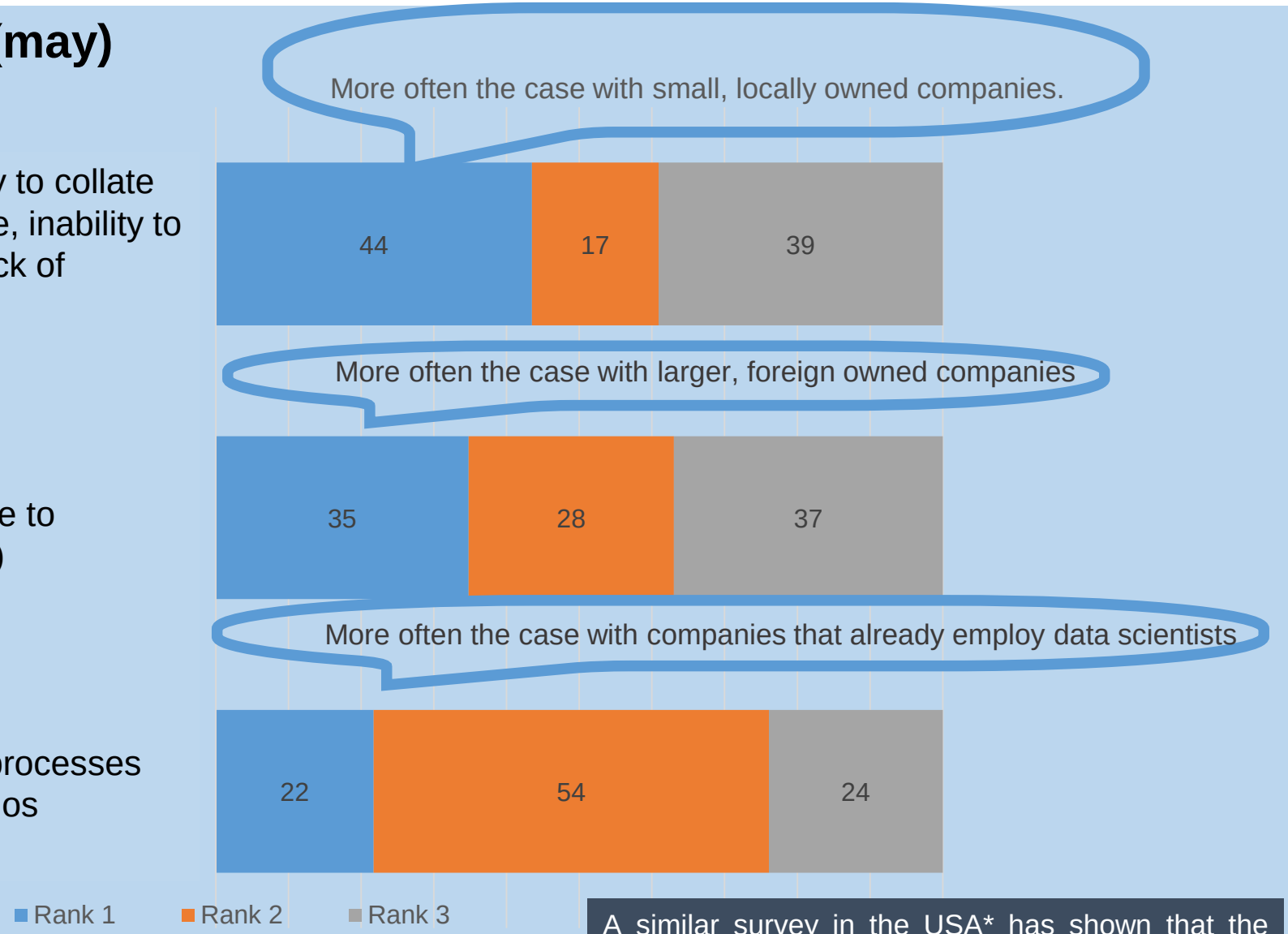
Obstacles that data scientists (may) encounter in a company

1. Technological obstacles (inability to collate and unify data, data not available, inability to process and warehouse data, lack of appropriate tools, etc.)

2. Organizational culture (resistance to change, silos organizations, etc.)

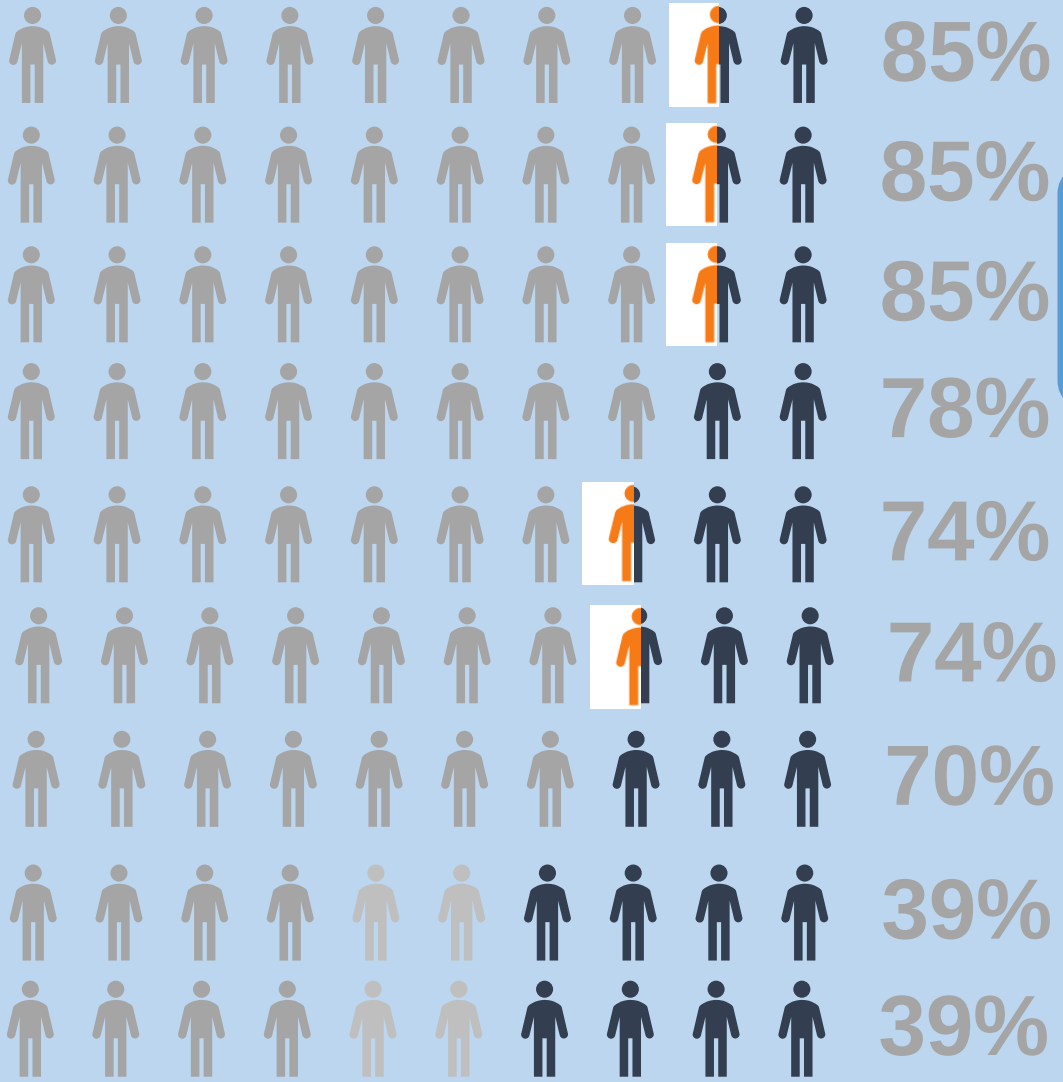
3. Organizational obstacles (what processes are being used to obtain data, silos decision-making, etc.)



Q3_6 What are the most common obstacles that data scientists in your company may encounter (or have already encountered) in your company? On the scale of 1 to 3 please rank the options provided.

A similar survey in the USA* has shown that the main obstacle that is preventing a company from becoming more data-driven is people much more than technology

Data scientists' skills that company managers deem important



What managers deem important is communication and knowledge of industry

9% don't know

9% don't know

9% don't know

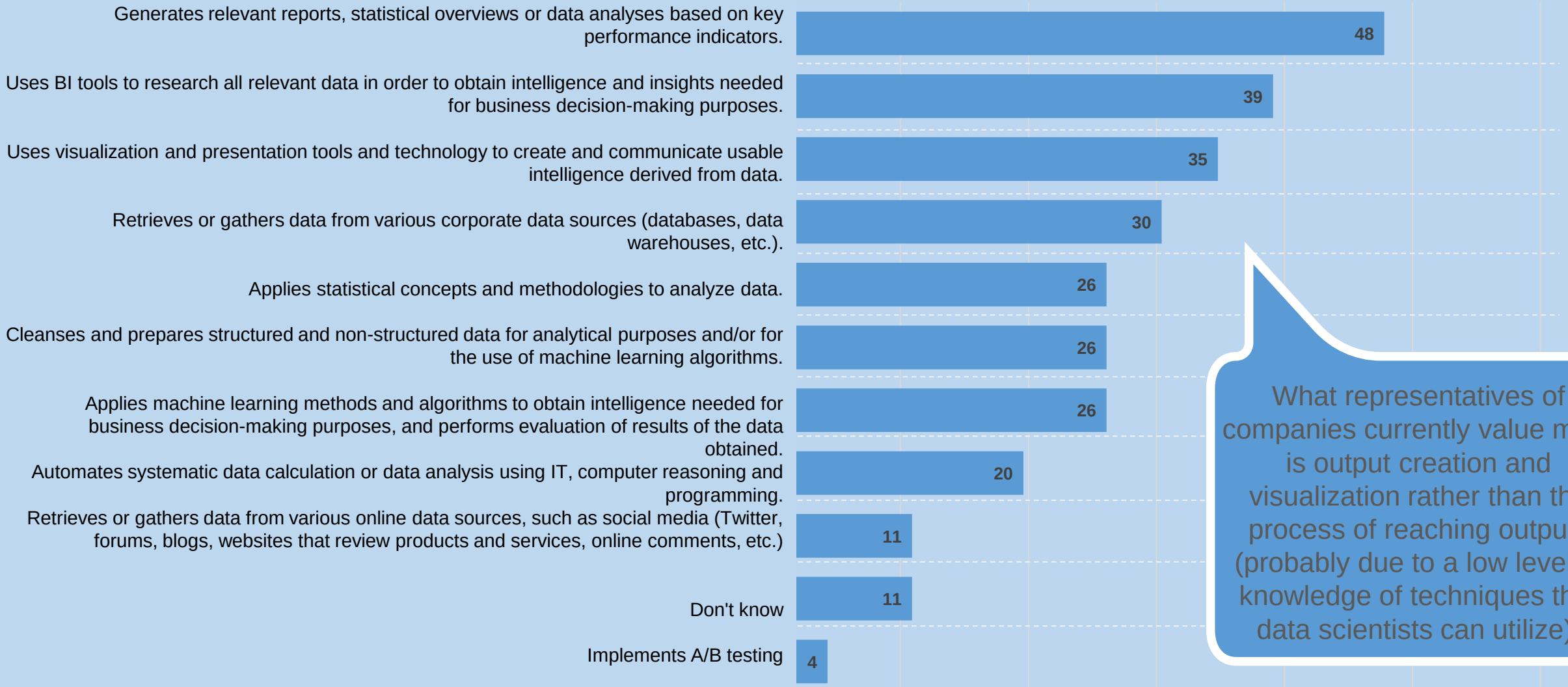
15% don't know

Q4_1 In your opinion, what skills should data scientists possess? Please score the following statements on the scale of 1 to 5; 1 is for unnecessary skills; 2 is for irrelevant skills; 3 is for a neutral view; 4 is for relevant skills; and 5 is for crucial skills. n=46; % is the top 2 boxes (i.e. the percentage of respondents who gave the score of 4 or 5).

And more...


Knowledge of trends
Technical skills
Adaptable to any circumstances
Teamwork
Patience
Creativity
Organizational skills
Developed logic
Analytical
Communication
Strong presentation skills
Diligence
Conscientious
Communicative
Knowledge transfer
Maintain personal hygiene and wear normal clothes
Precision
Thinking outside the box
Manners
Understand what he/she is asked to do
Stakeholders management
Moderate relationship between love-technology and love-outcome
Ability to work in ad hoc teams and collaborate with other departments within the company
Ability to process numerous data of different kinds and from different sources
The place and link of the given research subject with everything else that is relevant for the research benerficiary

Data scientist's knowledge that the company needs



What representatives of companies currently value more is output creation and visualization rather than the process of reaching outputs (probably due to a low level of knowledge of techniques that data scientists can utilize).

Q4_2 Please list three most important characteristics that are (would be) included in the data scientist job description in your company.

Job Description „Advanced data analyst in business“ (data scientist) – *consensus among surveyed experts*

Business aspect

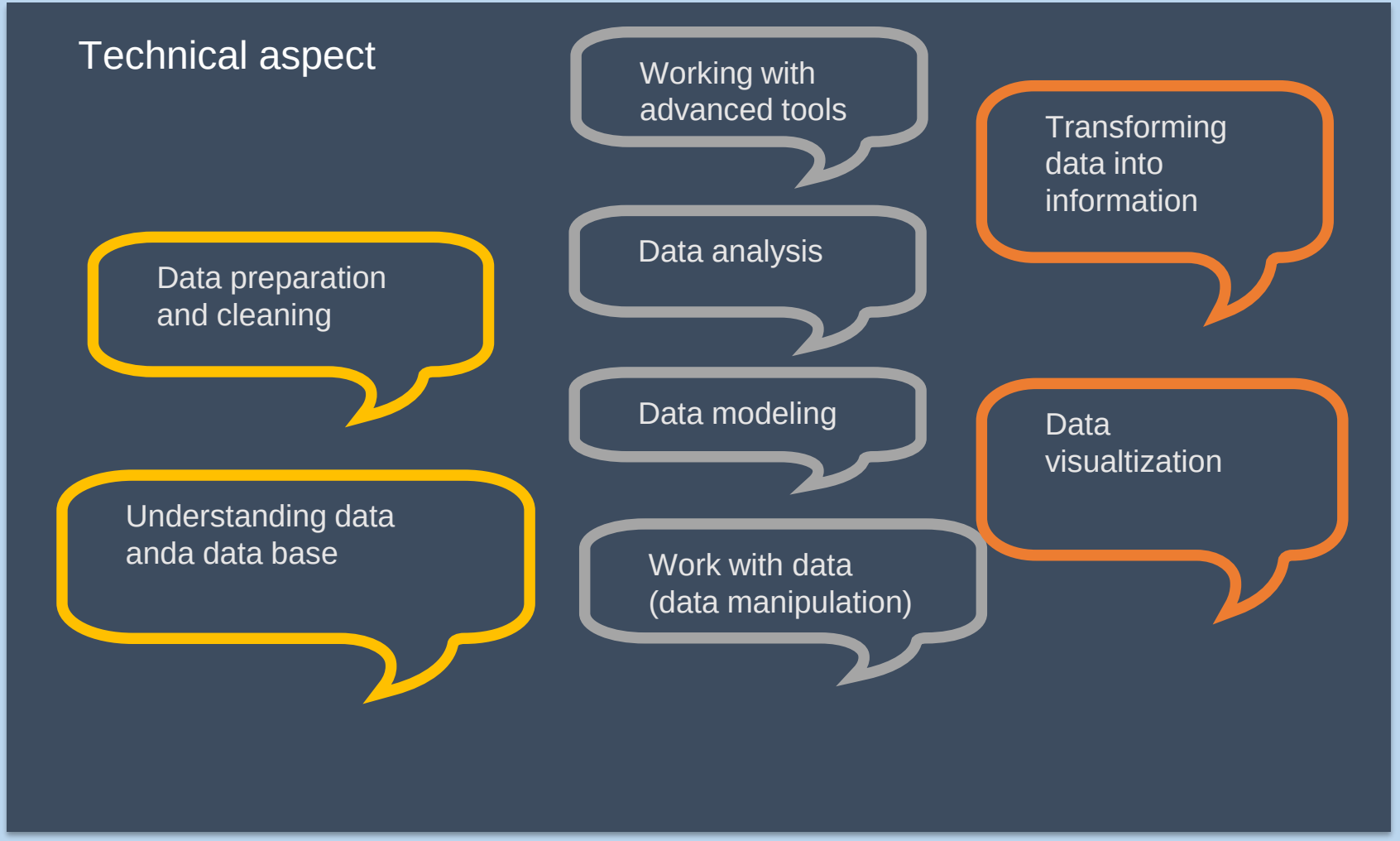
Open to cooperation with domain experts („it is not possible to be expert in all areas where analytics is needed”).

Recognizing business problem

Communication with other departments

To be involved in defining processes in the firm i.e. in defining data that are produced by those processes („today we have situations that new applications are implemented within the company, without including data scientists in the process, and then those data are not complete or are later unusable”).

Job Description „Advanced data analyst in business“ (data scientist) – *consensus among surveyed experts*



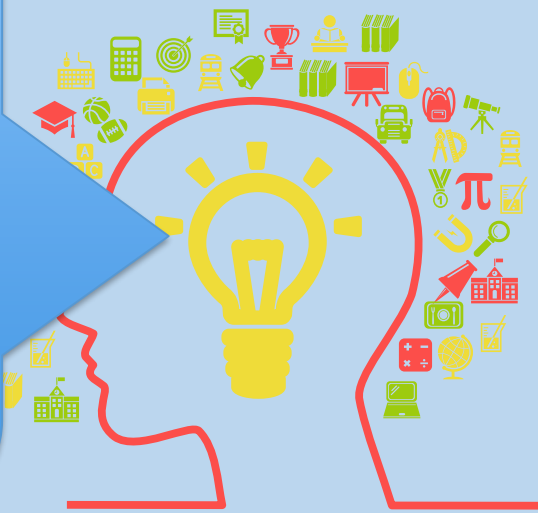
Job Description „Advanced data analyst in business“ (data scientist) – *consensus among surveyed experts*

Knowledge

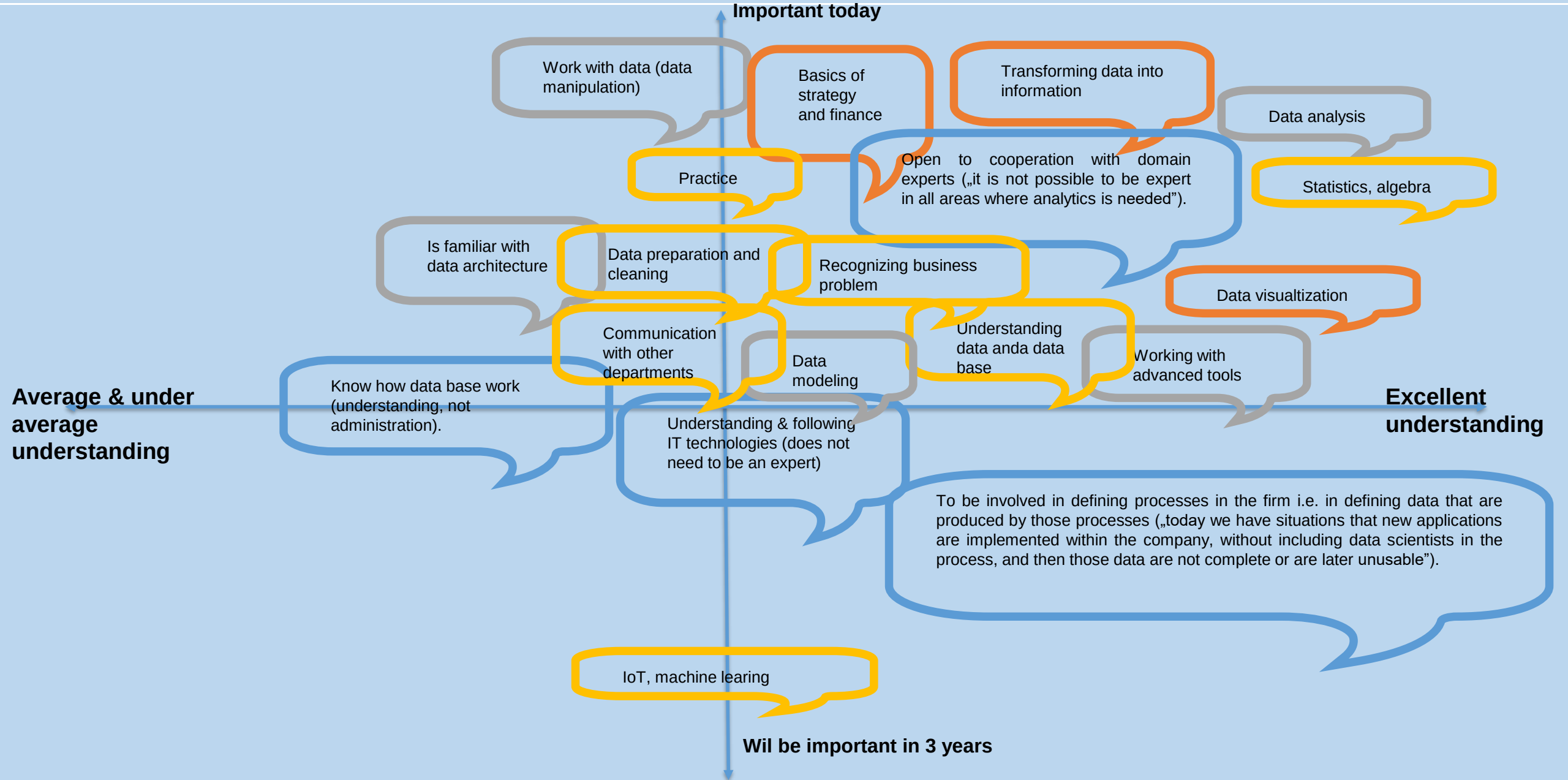
- Is familiar with data architecture (not to create, but to know it)
- Know how data base work (understanding, not administration).
- Basics of strategy and finance
- Statistics, algebra
- Understanding & following IT technologies (does not need to be an expert)
- IoT, machine learing

IT IS NOT THE JOB OF DATA SCIENTIST:

- Does not need to be an expert in programming or in program language, which is not part of his job
- Data base administration
- To be financial expert .
- To do all IT work
- To create data architecture (data engineering)



JD Data scientist: what is important to know today, what in 3 years



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Job Description „Advanced data analyst in business“ (data scientist): different opinions)

CANNOT BE A DOMAIN EXPERT

It is not possible to be expert in his area of work and to understand each industry and all business process in each industry.

DOES NOT NEED TO BE GOOD PRESENTER

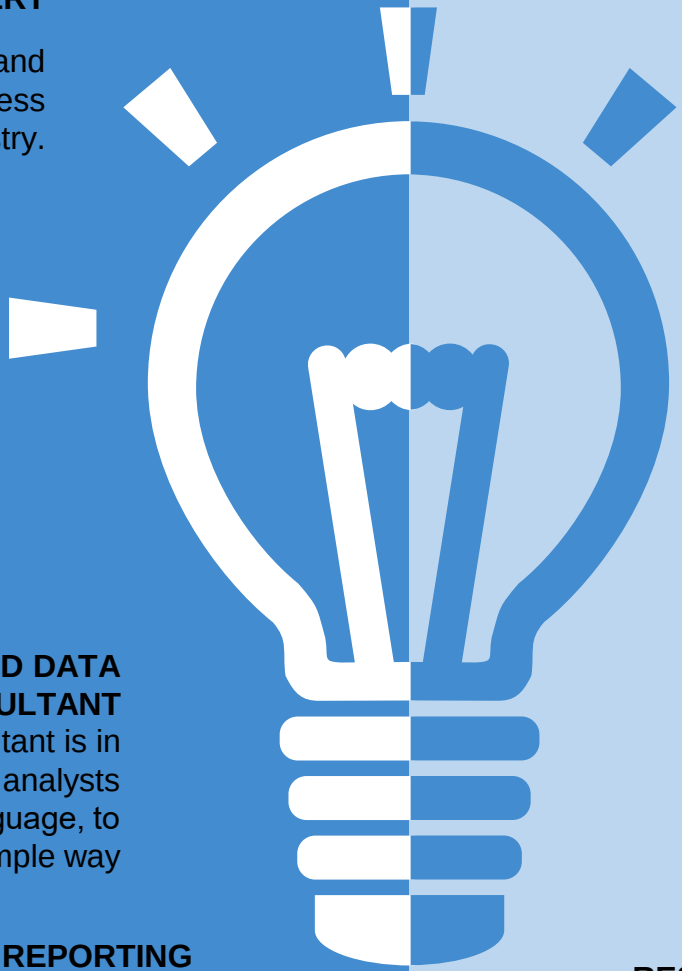
It is enough to prepare domain expert (how is not data scientist) for presentation.

THERE ARE 2 POSITIONS DATA ANALYST AND DATA CONSULTANT

„Analyst must have more technical knowledge. Consultant is in business, he should translate the work that data analysts executes, to model, to has the „understandable“ language, to know how to communicate in simple way

DOES NOT NEED TO DO REGULAR REPORTING

Regular reporting should not be part of his work.



MUST HAVE EXCELLENT KNOWLEDGE OF PARTICULAR INDUSTRY

„Understanding business is of crucial importance. Without that, it is not possible to communicate with people who are not familiar with analitys. People need to understand why data are important, why analytics is critical, what will be the outcome of analysis and what will be the positive influence on their business. Experts claim that it is easier to find Data scientist than domain experts who understand what they can learn by utiilzing data science“

MUST BE GOOD PRESENTER

Must be capable to explain in simple and understandable way the results of his work, and how complex analytics can improver business.

THERE IS ONLY 1 POSITION

„He in on the front, next to business, next to people who will make decisions“

RESPONSIBLE FOR REGULAR AND ACCURATE REPORTING

Interesting findings

„Data scientist is part of the team (internal or external). There are a lot of specialization within this area so it is not possible that one person has it or knows it all: from news in architectures, application of predictive analytics and modeling, thru application of neuro networks (as science area that are developed constantly) ... A lot of time need to be invested in knowing how to create high quality models, and business does not have time. You need to have a person who understands that need, but not only to design complex models at the level which is required from the person in charge of modeling, since there are not enough time".

„It is very important that lecturers of this master studies are not only from academic and theoretical side, but also people from business practice. Also, it is important that students have practical experience of 3 months to understand and see how things are done in companies. Each industry has its own specifics, margins, etc."

Organizational solution: „BI integrates business and data science".

„There are two positions: data analyst i data consultant – he is in business, he is the on who should translate that things that data analysts executes, to model, to has the „understandable" language, to know how to communicate in simple way...."

Organizational solution: „to have Data lab at company level and which is at disposal to all departments".

There are 2 types of Data Scientist IT oriented & business oriented.

„THE MAIN GOAL IS FOR DOMAIN EXPERTS TO BE IMPROVED IN ORDER TO BETTER UNDERSTAND AND UTILIZE THE WORK OF DATA SCIENTIS! It is easier to find Data scientist than a domain experts who understand what they can learn by utiilzing data science"

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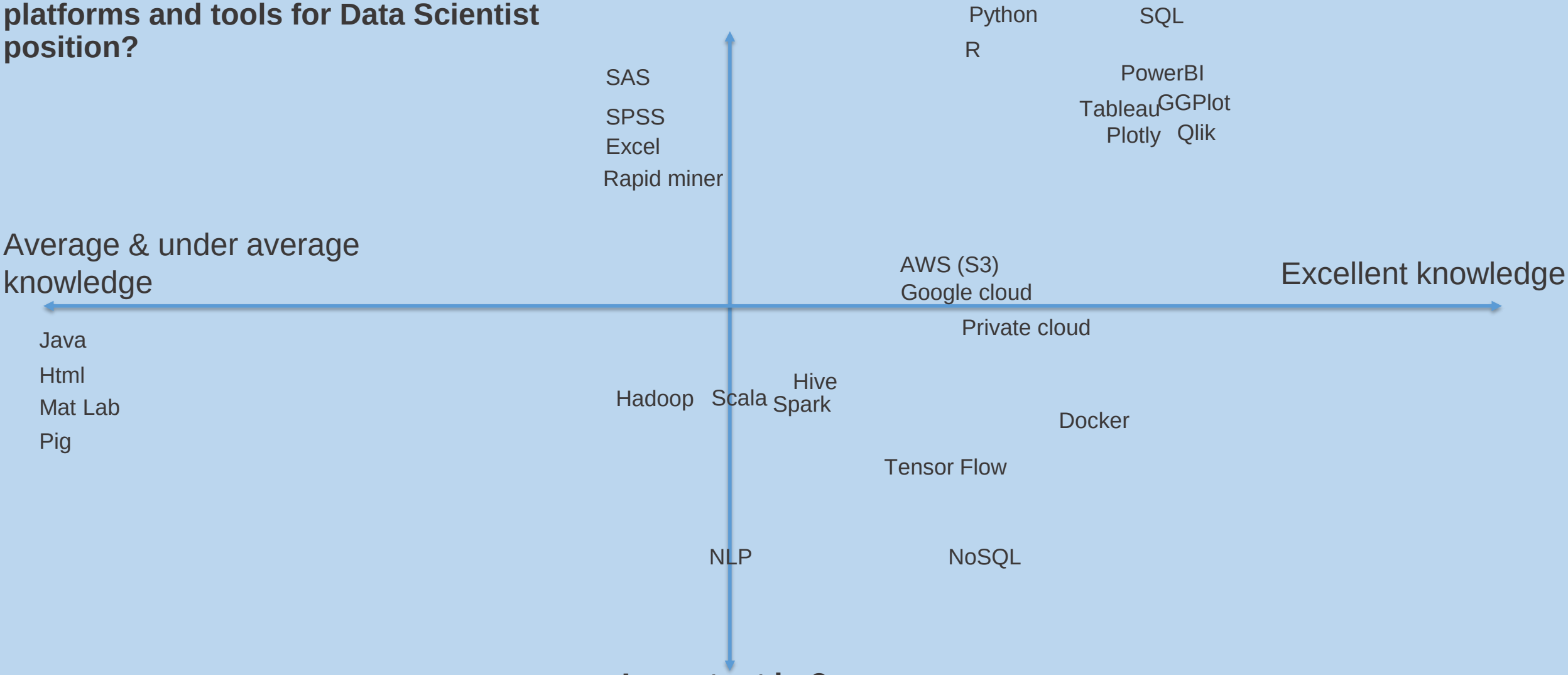
How important are the following program languages, technologies, cloud platforms and tools for Data Scientist position?



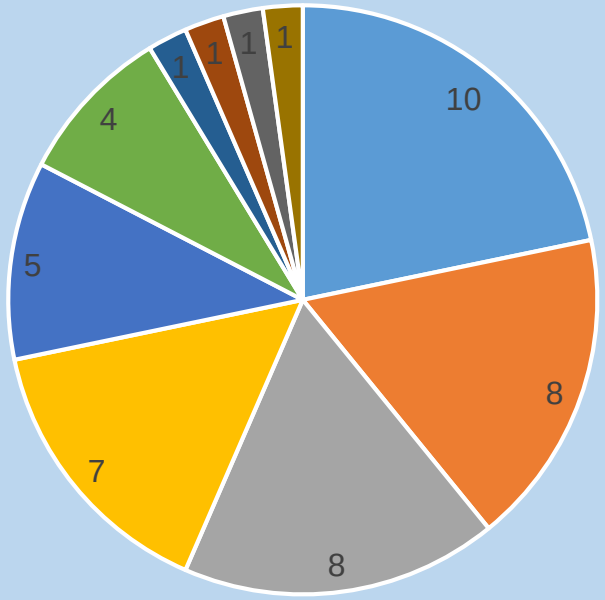
Business basics that Data scientist must be familiar with:

- Strategic Management
- Understanding value chain
- Understanding business processes (because they are changed by data science)
- Basics of finance (ROI, Balance Sheet, Income Statement…)
- Soft skills: presentation skills, communication skills...)

Quantitative Survey details

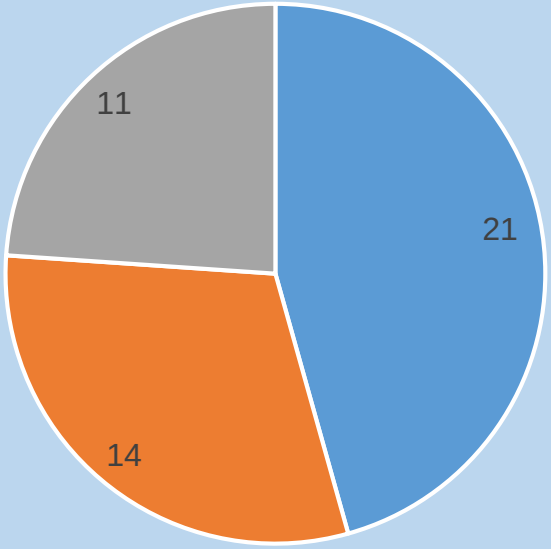
SAMPLE (number of respondents):

Business activity:



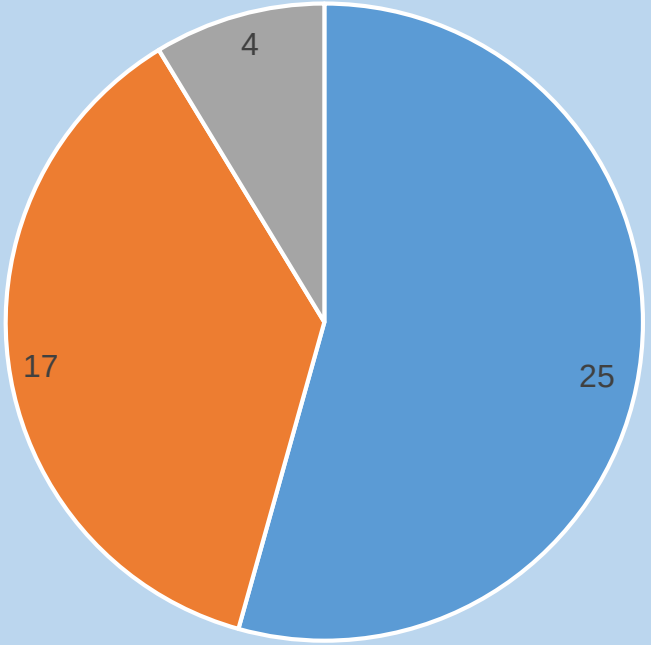
- Professional services
- Other
- Production
- Financial services
- Telecommunication
- Retail
- Media, communication, entertainment
- Education
- Insurance
- Transport

Company size:



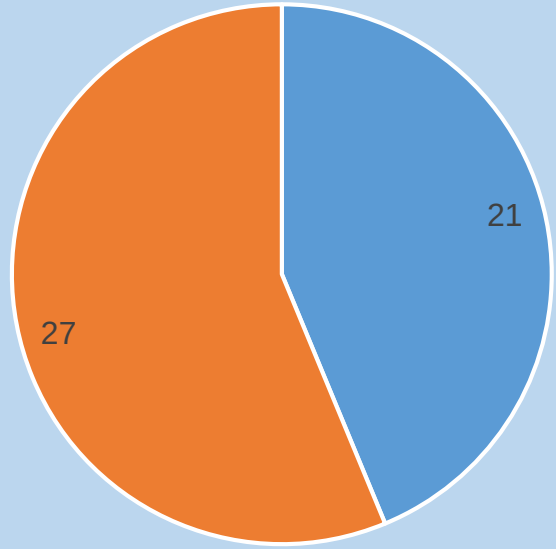
Small Medium Large

Operating for:



Domestic market Equally domestic and foreign markets Foreign markets

Ownership:



Local Foreign

Note: The sample DOES NOT represent companies in Serbia, which means that the conclusions of this survey may not reflect other companies in Serbia.

Survey technique: online (CAWI)
Target group: members of SAM
Survey period: April 2019

Details on qualitative survey

- Group discussion held on May 5th 2019 in Serbian Association of Managers
- Participants: 12 representatives of SAM members' companies, directly or indirectly responsible for application of advanced analytics

Thank you!

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