

Data, BI & Analytics Trend Monitor 2022

The world's largest survey of data, BI and analytics trends

BARC Research Study





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Foreword





Many companies are still adapting to changed requirements due to the COVID-19 pandemic. Although the situation now seems less acute and more long-term changes toward a 'new normal' are on the horizon, day-to-day business is far from settled. Some companies are dealing with last year's decline in orders, while others are coping with the ongoing supply chain disruptions or are still in the midst of adapting their business model to the changed requirements or better equipping themselves for possible future crises.

A look at this year's data, BI and analytics trends reveals that companies are still working to position themselves well for the long term and are working on the foundation of their data usage. Like 2020, 2021 is not a year of hype trends. Instead, companies are addressing the root causes of their challenges (e.g., data quality) and also tackling the holistic establishment of a data-driven culture.

This year, we asked 2,396 users, consultants and vendors for their views on the most important trends. The BARC Data, BI & Analytics Trend

Monitor 2022 illustrates which trends are currently regarded as important in addressing these challenges by a broad group of data, BI and analytics professionals. Their responses provide a comprehensive picture of regional, company and industry-specific differences and offer up-to-the-minute insights into developments in the BI market. Our long-term comparisons also show how trends have developed, making it possible to separate hype from stable trends.

Dr. Carsten Bange
Würzburg, Germany, November 2021

Management Summary





The market for BI and data management is constantly changing. As an industry analyst, we frequently highlight and predict important topics that have an impact on the agendas of organizations and the people within them. For this study we took a unique approach to

identifying trends: we asked over 2,300 users, consultants and vendors for their views on the most important BI, analytics and data management trends, delivering an up-to-date perspective on regional, company and industry-specific differences and providing

comprehensive insights on the BI, analytics and data management market. We have condensed the main findings of this study into six results areas in order to contextualize the most striking contrasts and continuous trends.

Result area 1 | Top trending topics

Data quality and master data management has been ranked as the most important trend for five years in a row now. This is in line with findings of other BARC Surveys that repeatedly show that companies are constantly battling with insufficient data quality. Hence, master data and data quality management will remain very important and is also linked to the equally stable significance of data governance, which was ranked in fourth position for four consecutive years before climbing to third place this year. Establishing a data-driven culture has increased in importance and is now ranked as the second most important trend. Since its introduction to the Trend Monitor in 2019, this trend has always ranked among the top five and is constantly gaining in prominence. This can be explained by the rising awareness that fostering a data-driven culture is vital to realizing the full data potential of a company. Data discovery and self-service analytics have slipped down the rankings slightly this year. However, being ranked four and five in our list of 20 topics underlines their importance to organizations. All the top trends combine organizational and technological elements. They act as a solid foundation on which most companies are keen to put great emphasis.

Result area 2 | Best-in-class companies

Best-in-class companies attach greater importance to all trends than organizations that see themselves as laggards. However, their perception of some trends is fairly similar (e.g., data governance and embedded BI & analytics). One thing best-in-class companies and laggards do not agree on is the importance of agile BI development and data discovery and visualization. Laggards are much less likely to adopt these trends. Compared to last year, laggards now place a little more emphasis on data governance and establishing a data-driven culture. Nevertheless, the gap between laggards and best-in-class companies is still clearly visible. Best-in-class companies have had these two topics on their agendas for some time and presumably also provide the necessary resources for implementation. Still, laggards also seem to have recognized the need to address the topics of data governance and data-driven culture. It remains to be seen whether this is a short-term phenomenon or whether the laggards will continue to attach increasing importance to these topics in the long term.

Result area 3 | Vendors vs. users

In general, vendors, consultants and users have quite a similar view of the importance of trends. However, perceptions differ when it comes to real-time analytics and data preparation by business users, which are seen as considerably more important by users and vendors than by consultants. However, users and vendors do not agree when it comes to the relevance of the cloud for data and analytics. Like the last two years, this is a trend that vendors cherish whereas users seem less enthusiastic. This also applies in the case of augmented analytics, where the views of vendors and users clearly differ. However, augmented analytics is still a relatively new sphere for many companies. It may therefore become more important for users in the future. The opposite effect can be observed in relation to analytics teams/data labs, which is a trend that users are more likely to rate as important compared to vendors. As a rather 'organizational' topic, it is understandable that it should be closer to the hearts of users than software providers.



Result area 4

Industry comparison

There are some trends that are consistently considered important across all industries. This especially applies to master data/data quality management as well as establishing a data-driven culture. Meanwhile, other trends are perceived as less important across all industries, such as IoT data and analytics and also augmented analytics. Nevertheless, the manufacturing sector pays less attention to most trends than other industries by grading the majority of trends with a below-average rating. In contrast, the IT sector attaches greater importance to the majority of trends.

Most industries present a mixed view. For example, the telecommunications sector attaches great importance to establishing a data-driven culture but sees mobile BI as less significant.

These industry-specific differences indicate which trends are prioritized, either because they facilitate day-to-day business in these sectors or because they add value over and beyond that.

Result area 5

Global differences

Observing trends from a geographical perspective reveals a greater tendency in the APAC region to assess trends as important. In comparison, most trends are generally rated as less important in Europe. The only exception can be observed in the case of master data and data quality management. Here, both APAC and Europe place similarly high emphasis on this trend. However, the generally rather conservative view is typical for Europe and can be further examined by looking more closely at the regions within Europe (see Results area 6). North America and South America have a rather mixed view on trends. While establishing a data-driven culture is perceived as important, augmented analytics and mobile BI are consistently deemed to be rather unimportant across all regions. However, when it comes to alerting, APAC and North America attach greater importance to this topic than Europe and South America. This finding perfectly illustrates the fact that priorities vary from region to region. In particular, new trends are perceived with varying degrees of enthusiasm.

Result area 6

Europe

The importance of trends is perceived quite differently across European countries. Southern Europe, Eastern Europe and the United Kingdom in particular place greater importance on most BI trends than the other European regions. Conversely, the German-speaking region (Germany, Austria and Switzerland – collectively known as DACH) places much less importance on most trends. The only exceptions in the DACH region are self-service BI and master data/data quality management, both of which are rated as similarly important across Europe as a whole. Master data/data quality management is also the one trend that the DACH region values the most.

All in all, the European perception reflects the overall assessment of the top trends: master data/data quality management, data discovery/visualization, data governance and establishing a data-driven culture are seen as the most relevant trends this year. This is a consistent finding over recent years and it shows that handling and leveraging data is hugely important regardless of region.

Survey Results

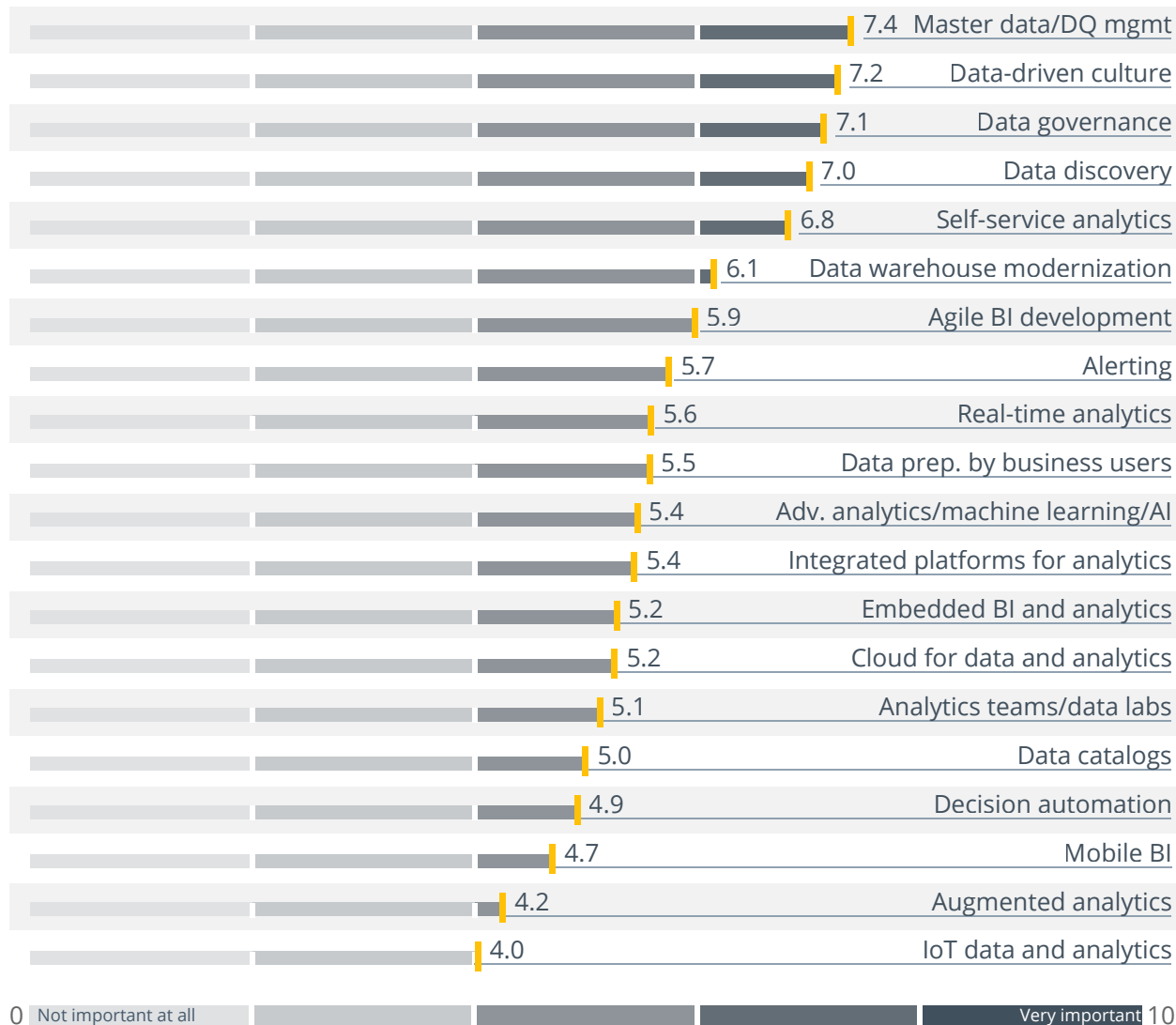


BI Trends Overview





Importance of Data, BI and Analytics trends from “not important at all” (0) to “very important” (10)



n = 2,396



Viewpoint

We asked users, consultants and software vendors of BI and data management technology to give their personal rating of the importance of twenty trending topics that we presented to them. Master data and data quality management in first position has retained this ranking over the last five years while the second most important trend, establishing a data-driven culture, has steadily increased in importance. The significance of these two topics transcends individual regions and industry sectors. Data-driven culture is a trend that was newly introduced to the BARC Trend Monitor three years ago. Starting from fifth position in the first edition, it made its way up to third place in the last two years and is now ranked number two. Data governance has also increased in importance. Having held down fourth position for several years, it rose to number three this year. Data discovery and self-service analytics have been equally consistent trends, but both have now taken a back seat to data-driven culture.

These top five trends represent the foundation for organizations to manage their own data and make good use of it. Furthermore, they demonstrate that organizations are aware of the relevance of high quality data. They want to go beyond the collection of as much data as possible and actively use data to improve their business decisions. This is also supported by data warehouse modernization, which holds on to sixth position this year.

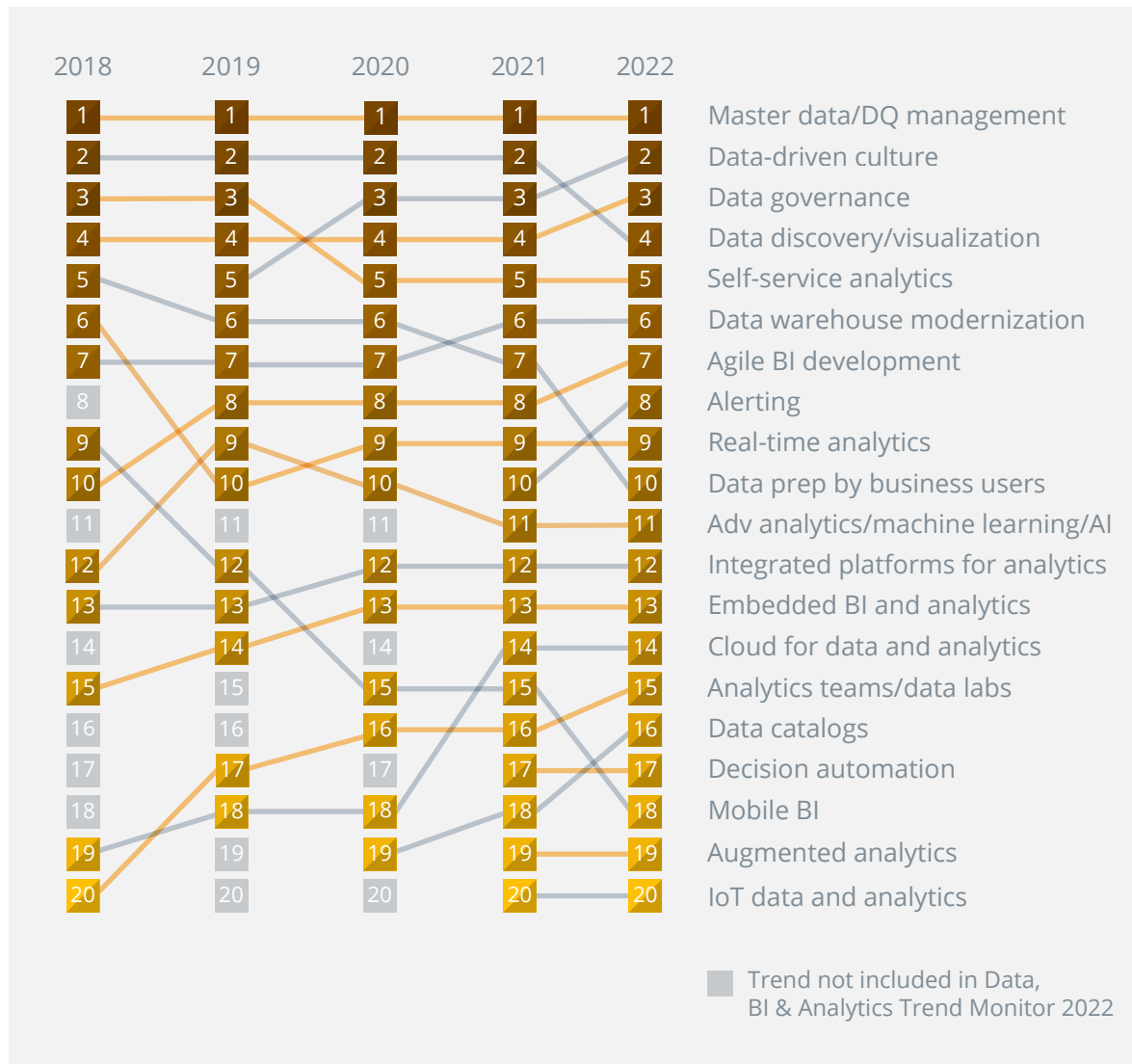
BI Trends Development



The trends are relatively stable. The biggest surge in interest is seen with alerting and data catalogs.



Development of rankings of Data, BI and Analytics trends



n = 2,770/2,679/2,865/2,259/2,396



Viewpoint

Some trends have slightly increased in importance since last year (e.g., data catalogs and alerting). However, most have stayed the same or just changed one rank. There are some major shifts in the downward trends. Data preparation by business users dropped from rank seven to rank ten due to alerting and agile BI development climbing the rankings. Mobile BI also fell three places to rank eighteen. In this case, a continuous downward trend can be observed over the last four years. In general, most trends have remained quite stable since last year. The overall picture indicates that companies are concentrating on the basics of using and managing their data before they shift their priorities on to advanced methods.

The Trends in Detail





16 Master Data/Data Quality Management
18 Establishing a Data-Driven Culture
20 Data Governance
22 Data Discovery/Visualization
24 Self-Service Analytics
26 Data Warehouse Modernization
28 Agile BI Development
30 Alerting
32 Real-Time Analytics
34 Data Preparation by Business Users

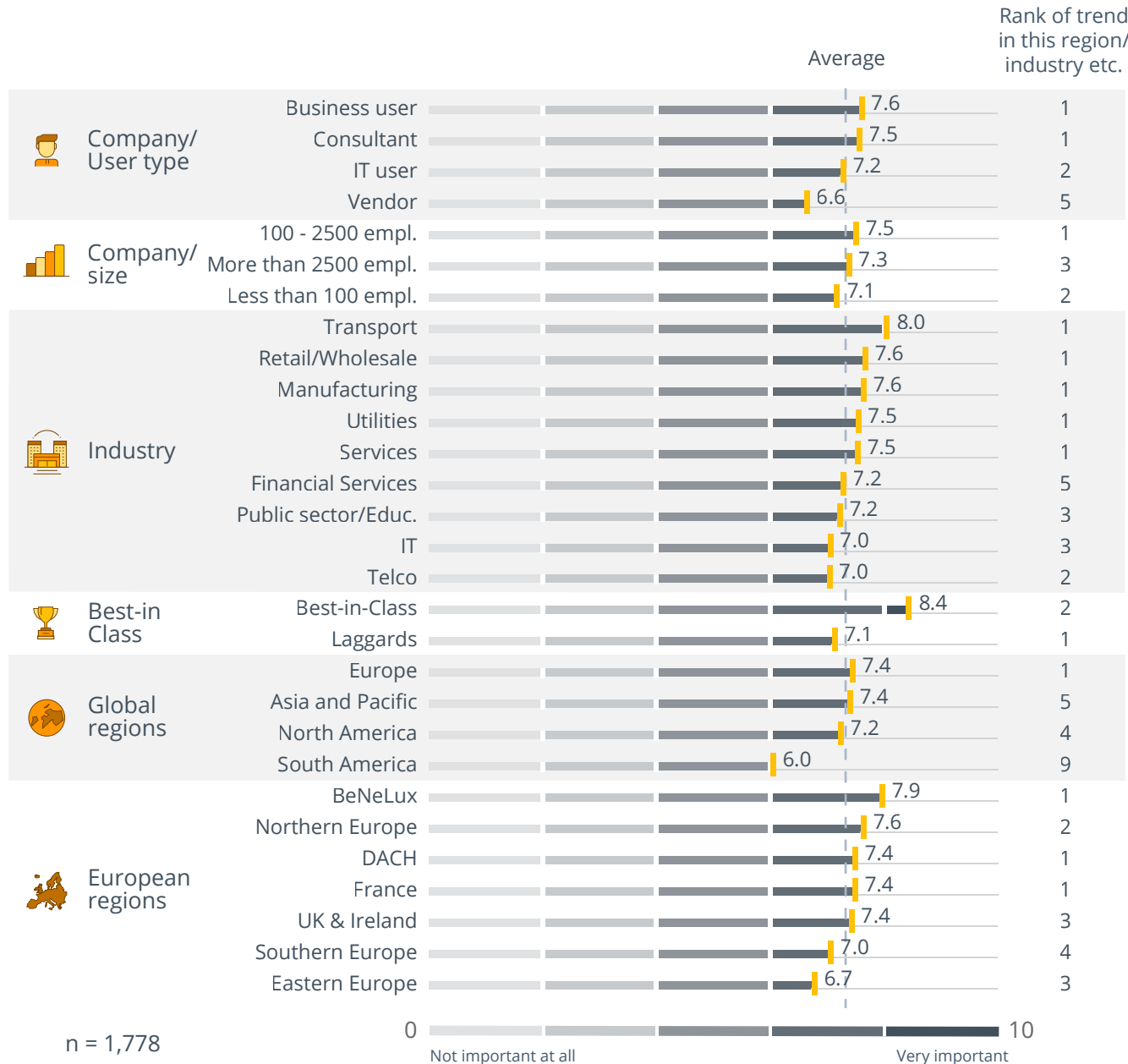
36 Advanced Analytics/Machine Learning/AI
38 Integrated Platforms for PM & Analytics
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50 Mobile BI
52 Augmented Analytics
54 IoT Data and Analytics

Master Data/Data Quality Management



Master data management is most relevant within best-in-class companies, and least relevant in South America and for vendors.

Master Data/Data Quality Management



Viewpoint

The importance of data quality and master data management can be explained very simply: Correct decisions can only be made on the basis of reliable, consistent data. Models can only make accurate predictions if they are trained and supplied with correct data. More than that, high data quality standards are essential in order to increase flexibility for business users.

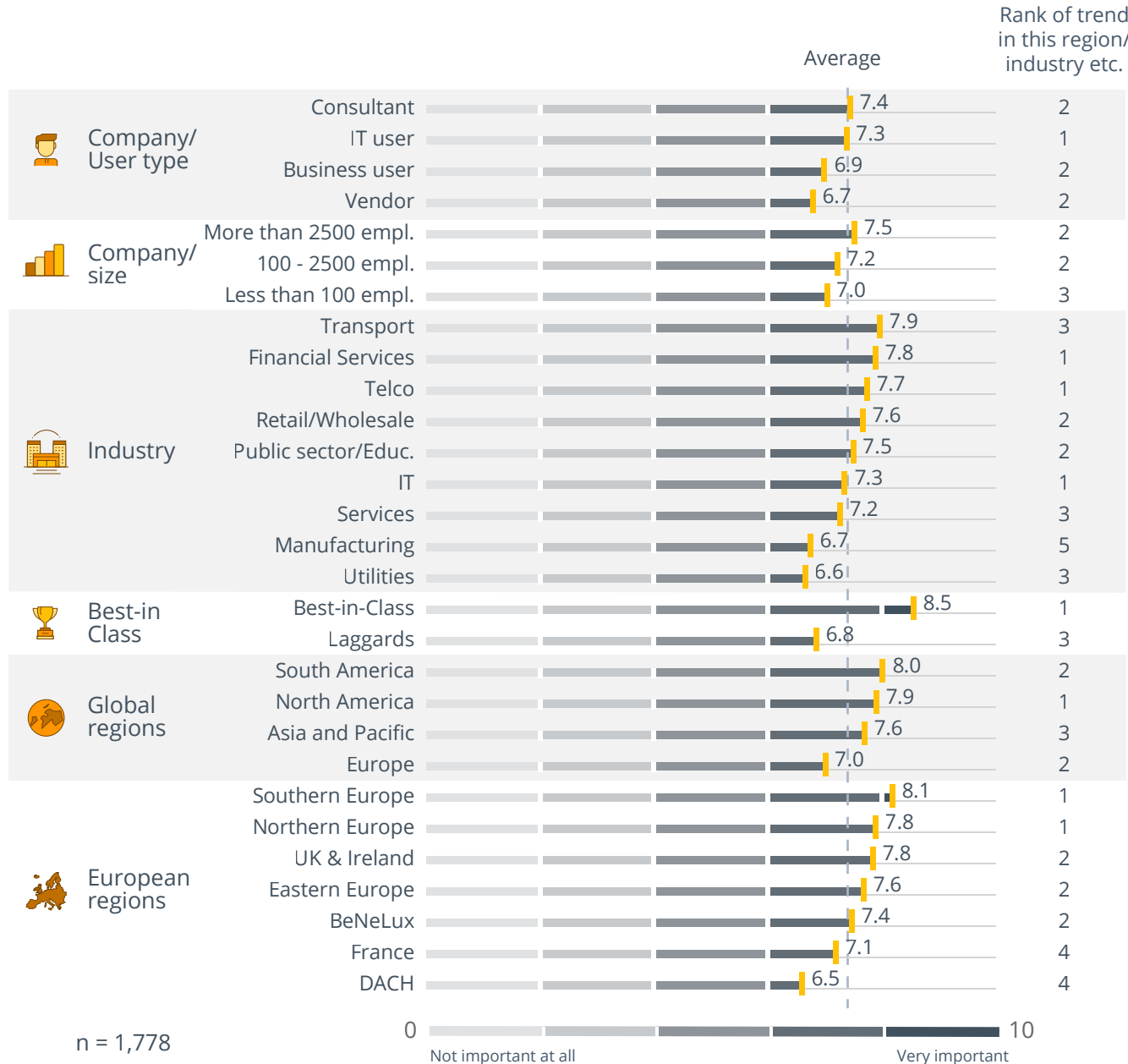
Master data provides the structure to understand and use data. It is only through master data that transactional data, IoT data and clickstreams get their meaning and context. Harmonized master data is critical to the uniform understanding of data and the interaction of company divisions as it helps to ensure consistent reporting and data-driven operations. In today's digital age, in which data is increasingly emerging as a factor of production, there is a growing need to flexibly use and produce high quality data to make new services and products possible.

There are proven concepts for increasing data quality and implementing master data management, but it is still a big challenge. The critical success factors for sustainable high data quality are defined roles and responsibilities, quality assurance processes, the continuous monitoring of the quality of a company's data and – most importantly – everyone's awareness and transparency regarding the impact of poor data quality.

Data-Driven Culture



Data-driven culture is important for best-in-class companies, but less popular in the DACH region and in the utilities sector.



Viewpoint

One of the biggest shifts in today's business world is the transformation from isolated and project-oriented data usage to a more broadly data-driven enterprise. This shift is not to be made at the level of single processes or employees but rather to be incorporated into the whole corporate culture. 'Data-driven' in this context means that as many decisions and processes within a business as possible are based on data. The basis of this approach is an 'information democracy' (i.e., the company-wide availability of as much data as possible for as many employees as possible).

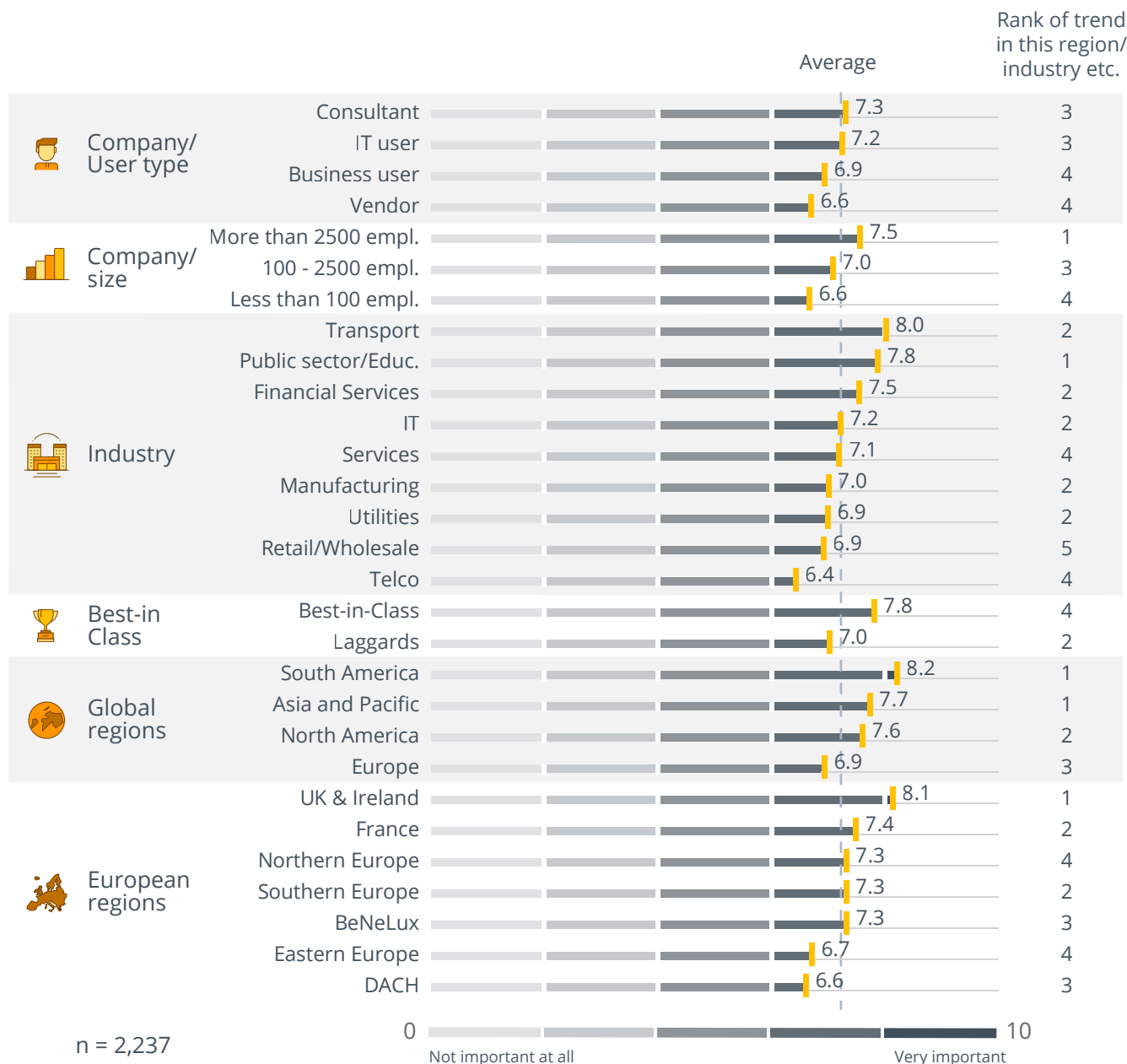
This concerns both quantitative and qualitative data that can be used to support the decision-making process. Decision-making at all levels – from operational to tactical and strategic – are affected.

While companies have always been interested in their numbers, the extent of data use is exercised at a higher level within a data-driven culture. The main aim is to empower all employees to actively use data to enhance their daily work. Ultimately, data becomes the key driver for successful decisions, effective and efficient processes, and new competitive advantages.

Data Governance



South American companies place the most value on data governance, the telecommunications sector much less so.



Viewpoint

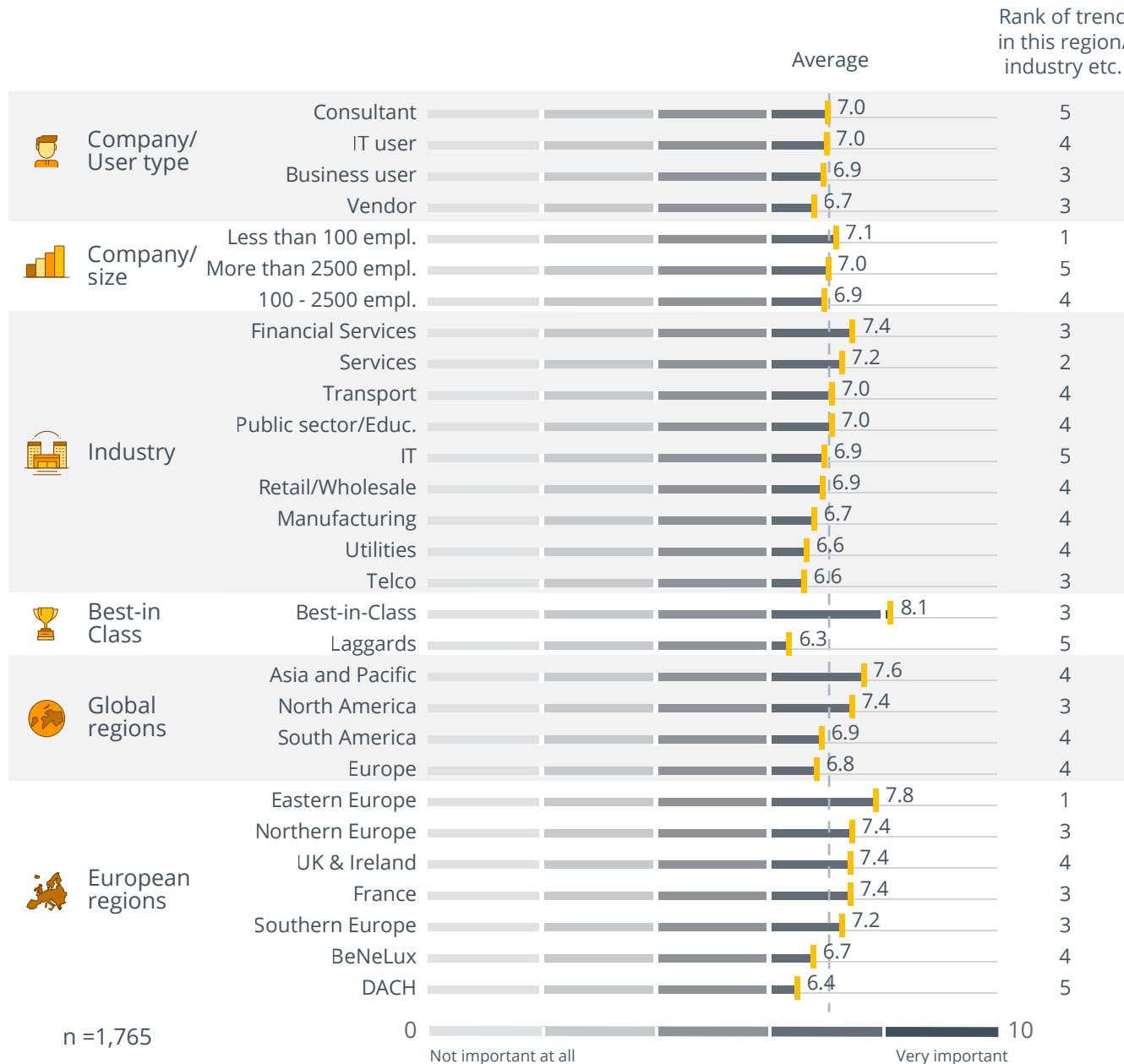
Unlike BI or analytics governance, which centers on preparing and presenting data for analytical use cases, data governance focuses on the data in all systems that are dealing with data. Because business and technical responsibilities are traditionally covered at a 'per system' level, this overarching view of data needs to be specifically addressed, preferably by a central body within the organization. This ensures broader thinking in terms of knowledge, organization and technology.

Data governance is needed as the steering mechanism for data strategy. A proper data strategy orchestrates how business strategy is translated into data and analytics. It enables the business to get value from data. Data strategy manages the exploitation of data across all business processes to promote business efficiency and innovation. Data governance is required to implement a data strategy, including policies and frameworks to manage, monitor and protect data capital while taking people, processes and technologies into account. Establishing data governance is a long-term endeavor. Most of all, it requires a clear, conscious management decision on how to work with and use data.

Data Discovery/Visualization



A big gap exists between best-in-class companies and laggards as well as between Eastern Europe and the DACH region.



Viewpoint

Data discovery helps business users to discover patterns, clusters, trends and outliers in their data in a self-service manner. At least three functional areas are required to identify these efficiently and effectively. Business users must be well equipped with data preparation features to connect to a wide range of sources, as well as to clean, enrich and shape data to publish data sets for analytics. These data sets are explored by visual analysis or by guided advanced analytics. All functions required to complete the analytics cycle must be integrated tightly to support the required iterative approach.

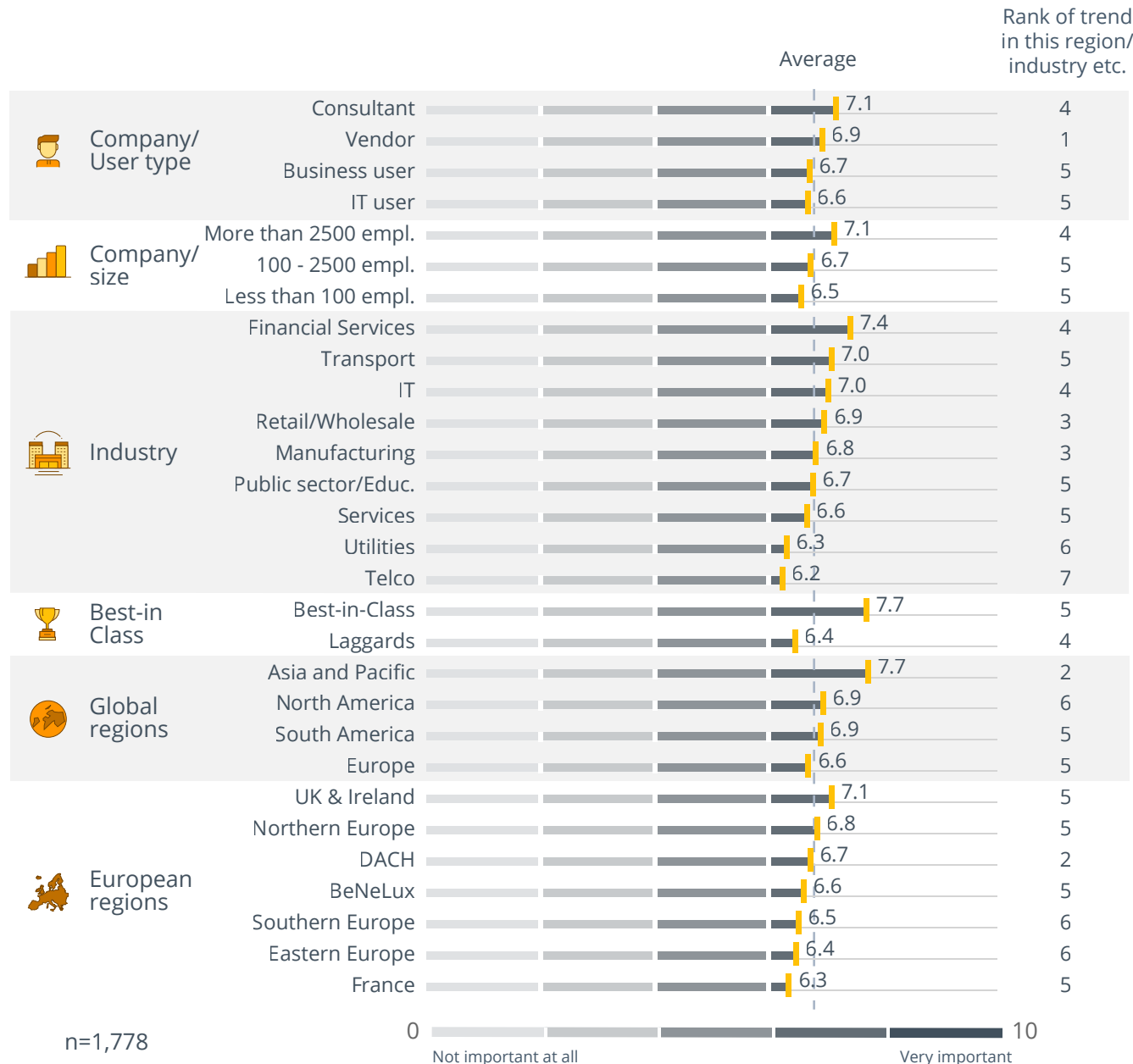
Data discovery is high on the agenda of many vendors and is evolving along two axes. Firstly, many vendors deliver data discovery at scale based on a governed platform to allow business users to build on each other's assets and deliver trusted results across the enterprise. Secondly, augmented analytics plays an increasingly vital role in data discovery. It enhances analysis results by providing automated insights and alerting users to hidden patterns and deviations.

Self-Service Analytics



Self-service analytics is a bigger trend in Asia & Pacific, but less relevant in France and the telecommunications sector.

Self-Service Analytics



Viewpoint

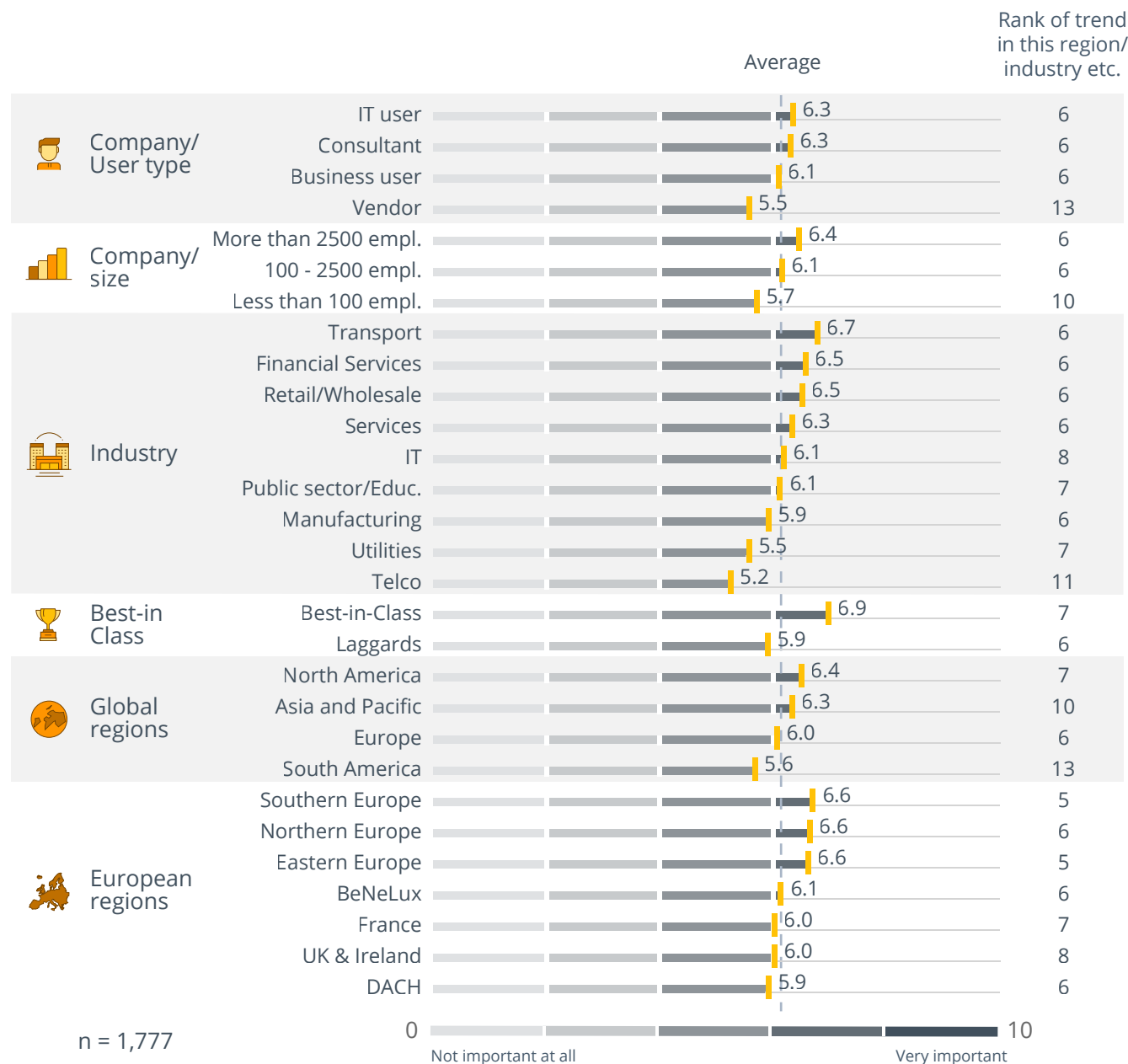
The possibility to create analytics and BI content through self-service is part of almost every new implementation and remains a high priority. The continuously high demand for self-service underlines the continued importance of equipping business users with modern analytics capabilities. But a shift has taken place. Companies today no longer solely focus on providing self-service capabilities to users to serve their departmental requirements. They want to democratize data access while ensuring efficient creation and consistent results.

Self-service analytics allows business users to self-reliantly answer urgent questions and inform decisions and decision-makers based on solid evidence. To do so, they communicate insights and results via quicker and more efficiently prepared visualizations and dashboards on all devices. The number of implementations that allow business users to build their own content is increasing. This creates more relevant content, which then attracts more users. Not all business users create analytics and BI content. Companies need to understand that self-service does not mean that business users do not require IT or analytics and BI experts. They still play a key role in enhancing, monitoring and supporting successful analytics and BI environments.

Data Warehouse Modernization



Very important in best-in-class companies. Less important in the telecommunications sector and for vendors.



Viewpoint

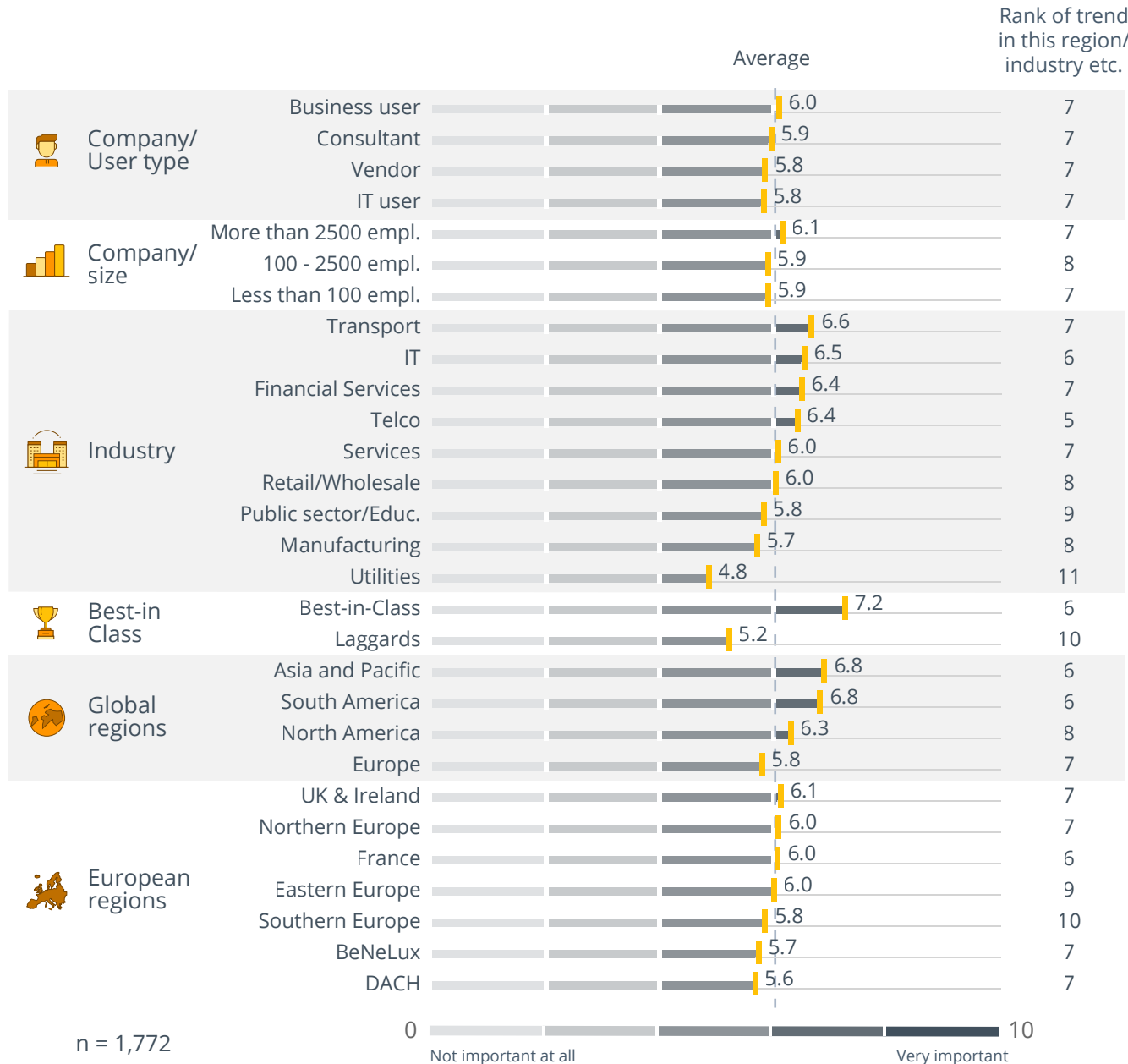
Older data warehouse landscapes have become too complex to support agile development, or too expensive to have their functionality extended to accommodate modern analytics requirements. Furthermore, the type of implementation for which many data warehouse landscapes were originally designed and optimized does not cover the way analytics is currently moving forward in the direction of exploration and operational processing alongside classical BI requirements.

Now, organizations are beginning to understand the new challenges and the potential of alternative methodologies, architecture approaches and utilizing other technical options such as in-memory, cloud data platforms and data warehouse automation tools. IT must be prepared for fast-changing analytical requirements, and must also compete against new and cheaper implementation options from external service providers. Collaborative approaches are needed to cover the increasing expectations of the business to pull maximum business value from data. It is now time to assess historically grown data warehouses against present demands and evaluate how updated hardware and technology could make life easier.

Agile BI Development



Best-in-class companies are much more aware of the value of agile BI than laggards. The utilities sector is the most cautious.



Viewpoint

Agile BI development is a customer-centric approach to provide reliable information products and services to meet dynamic business demand. Business and IT experts work together to provide continuous improvements to information products. New dashboards, reports and KPIs are supplied using model-driven, metadata-generated data pipelines and other data warehouse automation concepts. Metrics monitor the quality and usage of the delivered products or artifacts.

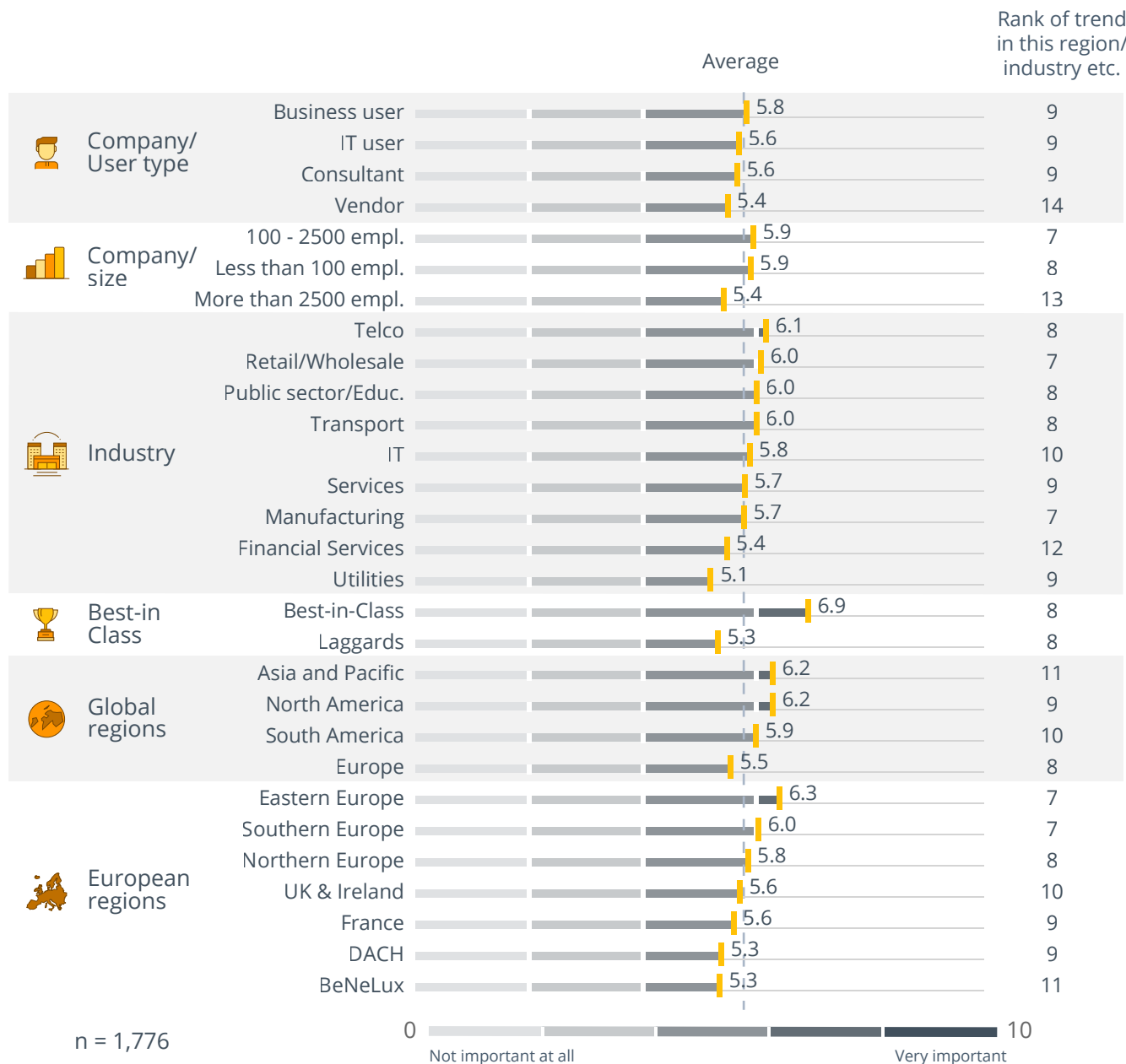
The DevOps approach brings a mindset and technical best practices to implement an automated continuous delivery pipeline enabling rapid change. DataOps aims to accelerate the provision of data and its use, to increase data quality, to automate data-driven processes and to make the value of "data as an asset" accountable.

The main benefits of agile development are speed, adaptability and closer alignment between business and IT.

Alerting



Best-in-class companies are top of the table for alerting. The utilities sector is less sold on the trend.



Viewpoint

Alerts and notifications in analytics and BI aim to save time by focusing the attention of business users with personalized warnings based on recent events.

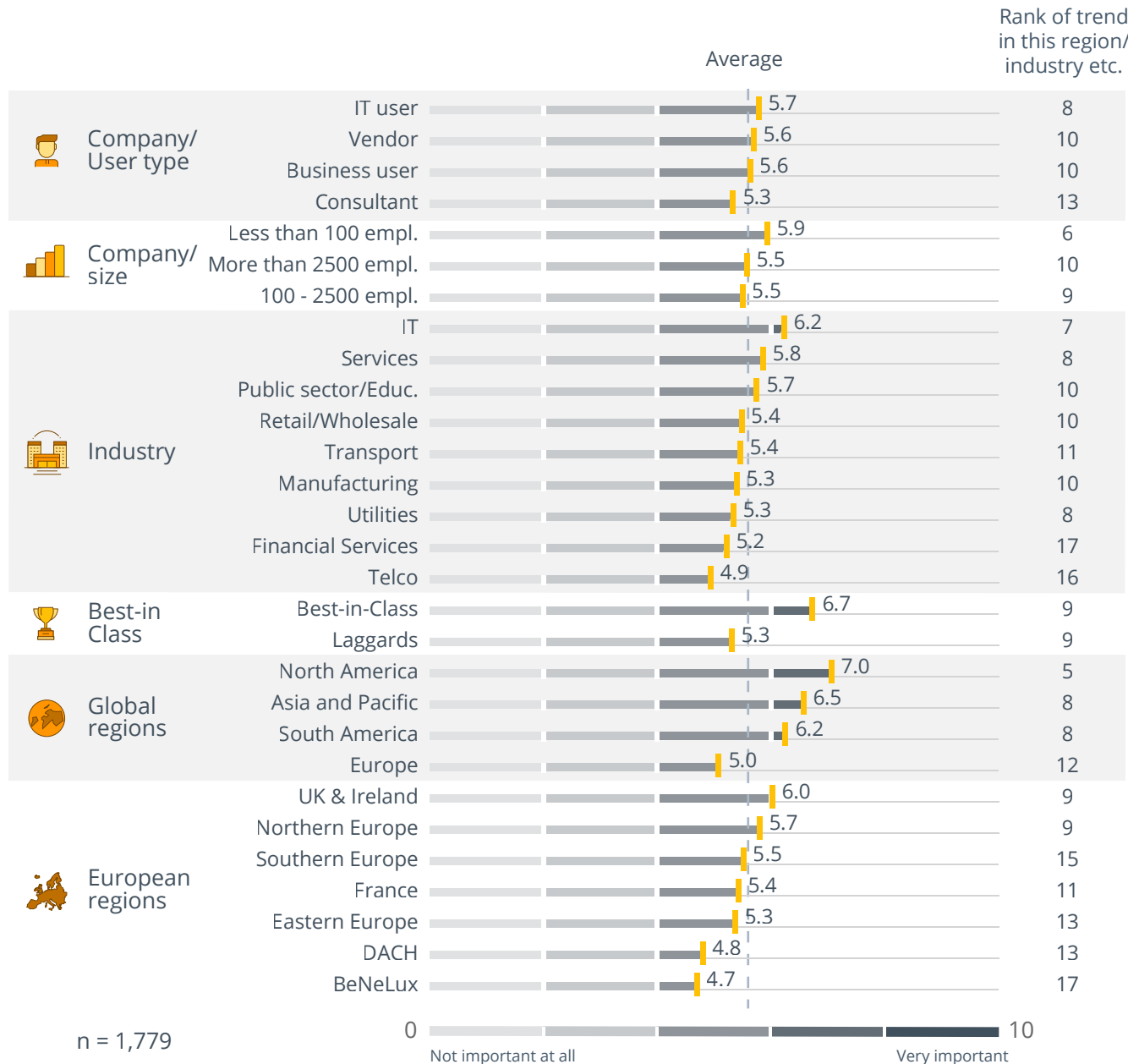
Previous approaches that required the upfront definition of what is deemed relevant, such as selecting KPIs and setting thresholds, failed to fully live up to their promise as they often did not grasp impactful changes. And the centralized approach whereby IT or analytics experts set up alerts does not deliver the speed required to react quickly enough in volatile markets.

More recently, alerts have moved from upfront definition to machine-made recommendations infused by usage patterns or outliers in data, often powered by machine learning and brought to prominence by the hype around augmented analytics. Machine learning is employed in leading tools to focus the attention of users on trends and outliers they were previously not looking for. Alerts can not only notify users of important changes, they can also trigger automated processes spanning multiple business applications, from sending reports to initiating corrective actions. Today, alerts are often used to detect events on real-time data streams. Here, the impact of analytics on business success and data monetization becomes obvious.

Real-Time Analytics



Real-time analytics is very popular in North America. Its relevance is much lower in BeNeLux and the DACH region.



Viewpoint

Faster reporting and analysis of data, not only in terms of query performance (which is still one of the biggest problems users experience with their BI tools), is a challenge in many companies. There is an increasing need to make data from transactional systems available immediately to support faster and fact-based operational decision-making.

Analytics with real-time data refers to the near-immediate processing and provision of information about business operations in transactional systems (i.e., streaming). Real-time analytics is about catching events or other new data immediately after their occurrence and processing them for alerting (e.g., in an operational dashboard) or triggering pre-automated events (e.g., an algorithm detects certain problems during the manufacturing process of a given batch and recommends or automatically triggers counter-measures).

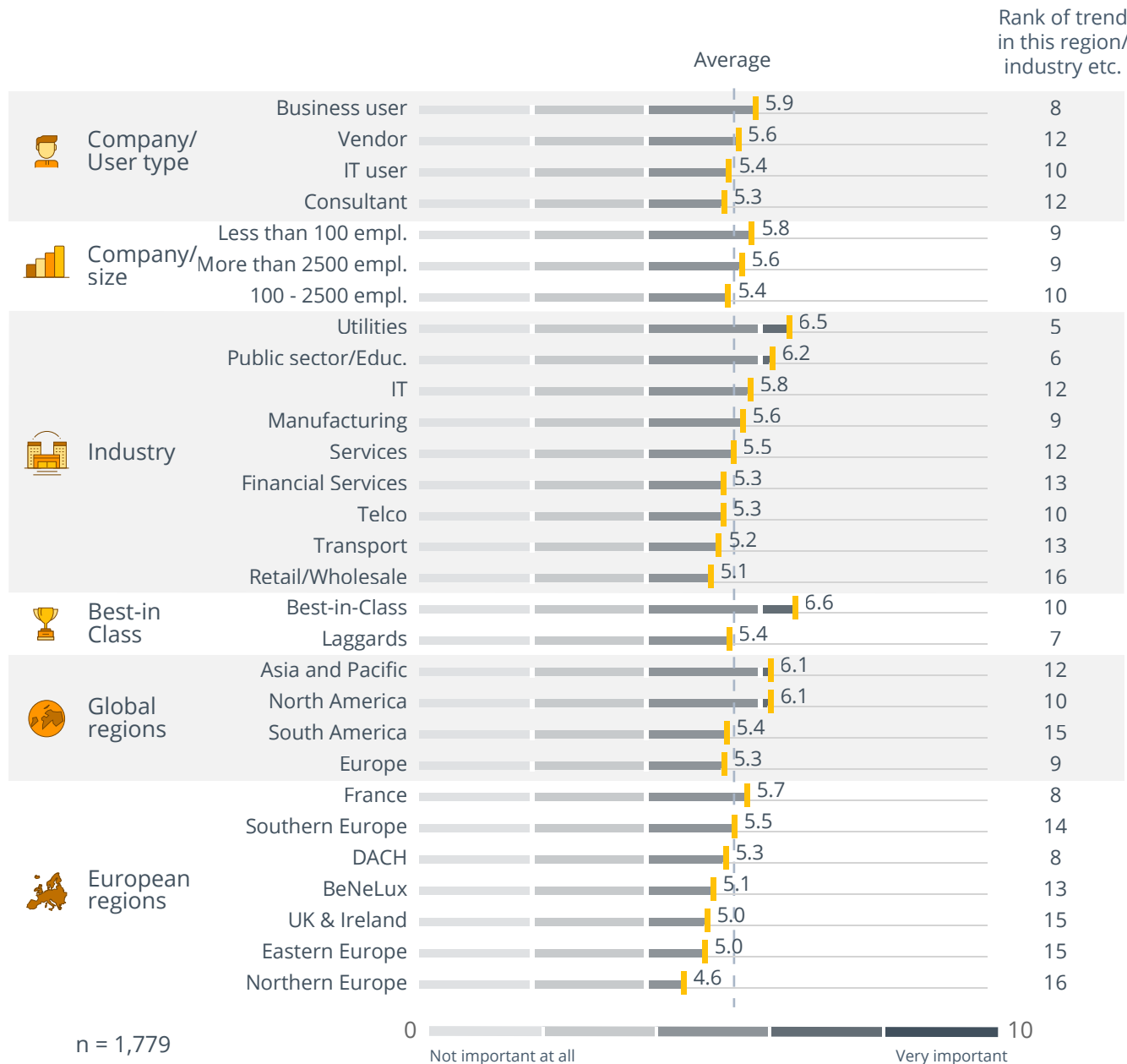
Like visual BI and predictive analytics, analytics with real-time data can complement an organization's existing analytics strategy to optimize certain business processes. As real-time analytics is nearly always tightly interwoven with a given business process, it is therefore even more important than in standard analytics projects to always have the entire process that is to be adapted and/or optimized in mind.

Data Preparation by Business Users



Data preparation is most important in best-in-class companies and the utilities sector and least relevant in Northern Europe.

Data Preparation by Business Users



Viewpoint

Data preparation encompasses cleaning, structuring and enriching data for use in analytics. Its goal is to build valuable assets from raw data to help answer concrete business questions through analytics.

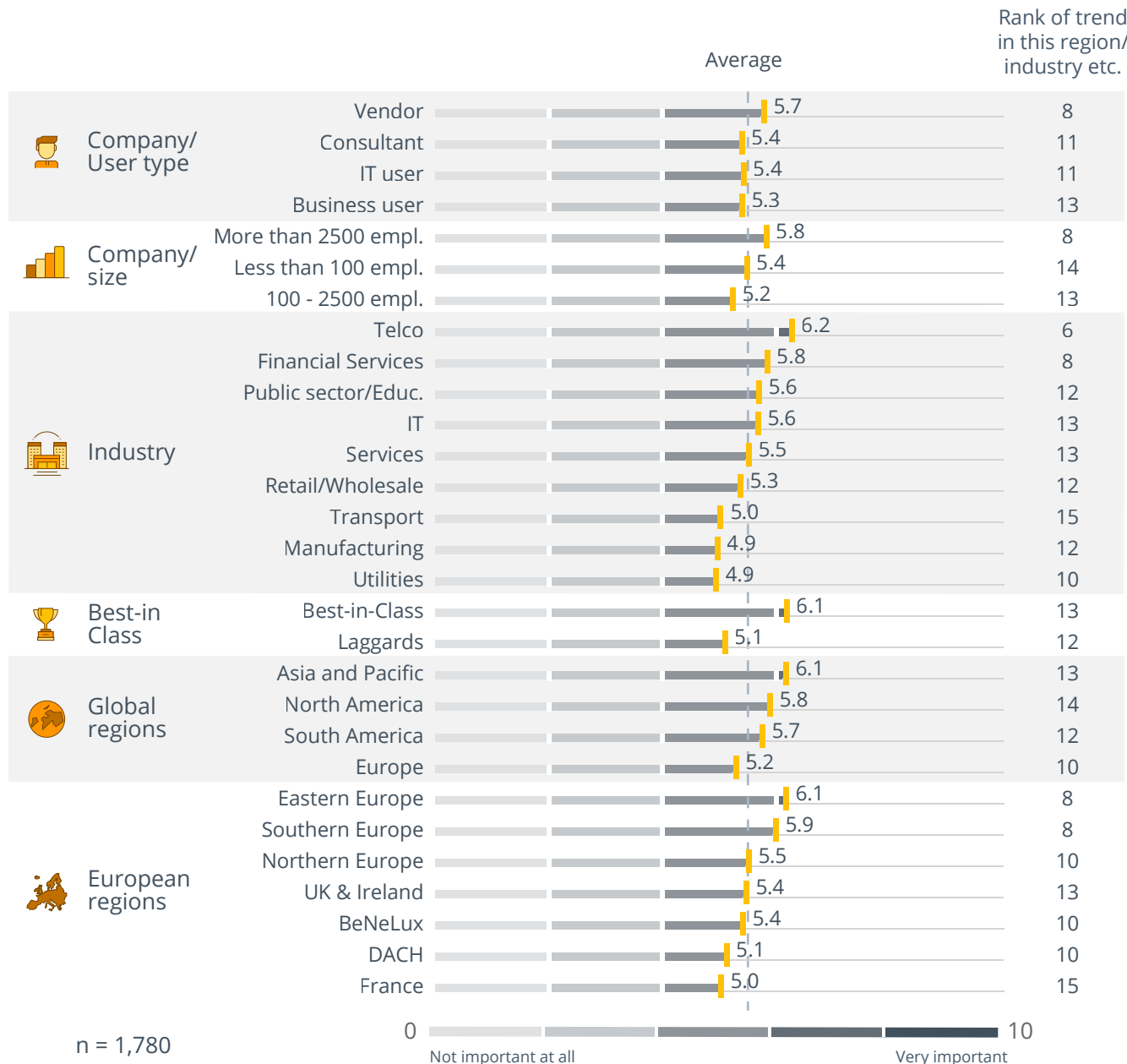
Achieving agile data preparation at scale is of utmost importance in today's volatile economy. It is key to leverage enterprise and external data to inform decisions, automate processes and obtain economic benefits.

Collaboration between development resources in IT and the business users involved is vital to ensure high efficiency and quality. The necessary agility is achieved by shifting the task of shaping and enriching data from IT to business users. Easy-to-use and intuitive tools with sophisticated user guidance and automation powered by machine learning are the foundation to infuse efficiency and quality into data preparation efforts. Governing distributed data preparation assets cannot be overvalued. Data catalogs serve as inventories and ensure access to and reuse of data. Collaboration must be promoted to benefit from democratized access to data. Providing the required systems and tools is just the first step.

Advanced Analytics/ Machine Learning/AI



The telecommunications sector leads the way. This trend is much less important to the utilities sector and in France.



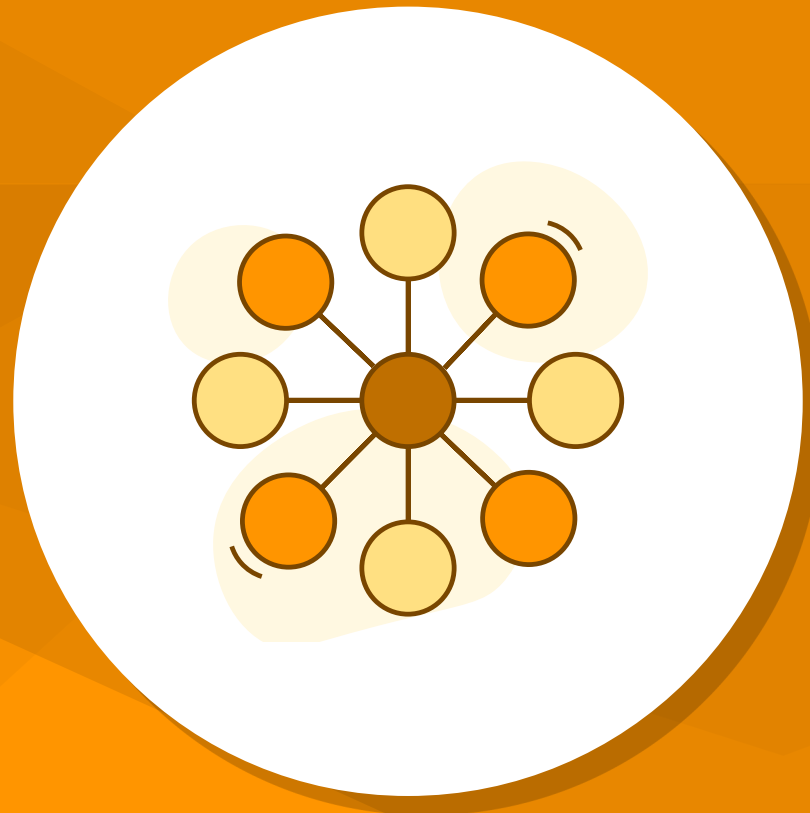
Viewpoint

Advanced analytics uses machine learning and mathematical and statistical algorithms in order to generate new information, identify patterns and dependencies, and calculate forecasts. There is a major drive to completely automate specific decision processes with AI. As of 2021, there is also a major shift happening in hardware and cloud services that are specifically designed and optimized to run machine learning and AI solutions. This is accelerating the speed with which new AI solutions can be deployed within businesses.

Possible use cases range from conducting forecasts on income, prices, sales or customer value to preventing contract cancellations, optimizing unplanned machine downtime, and many more besides.

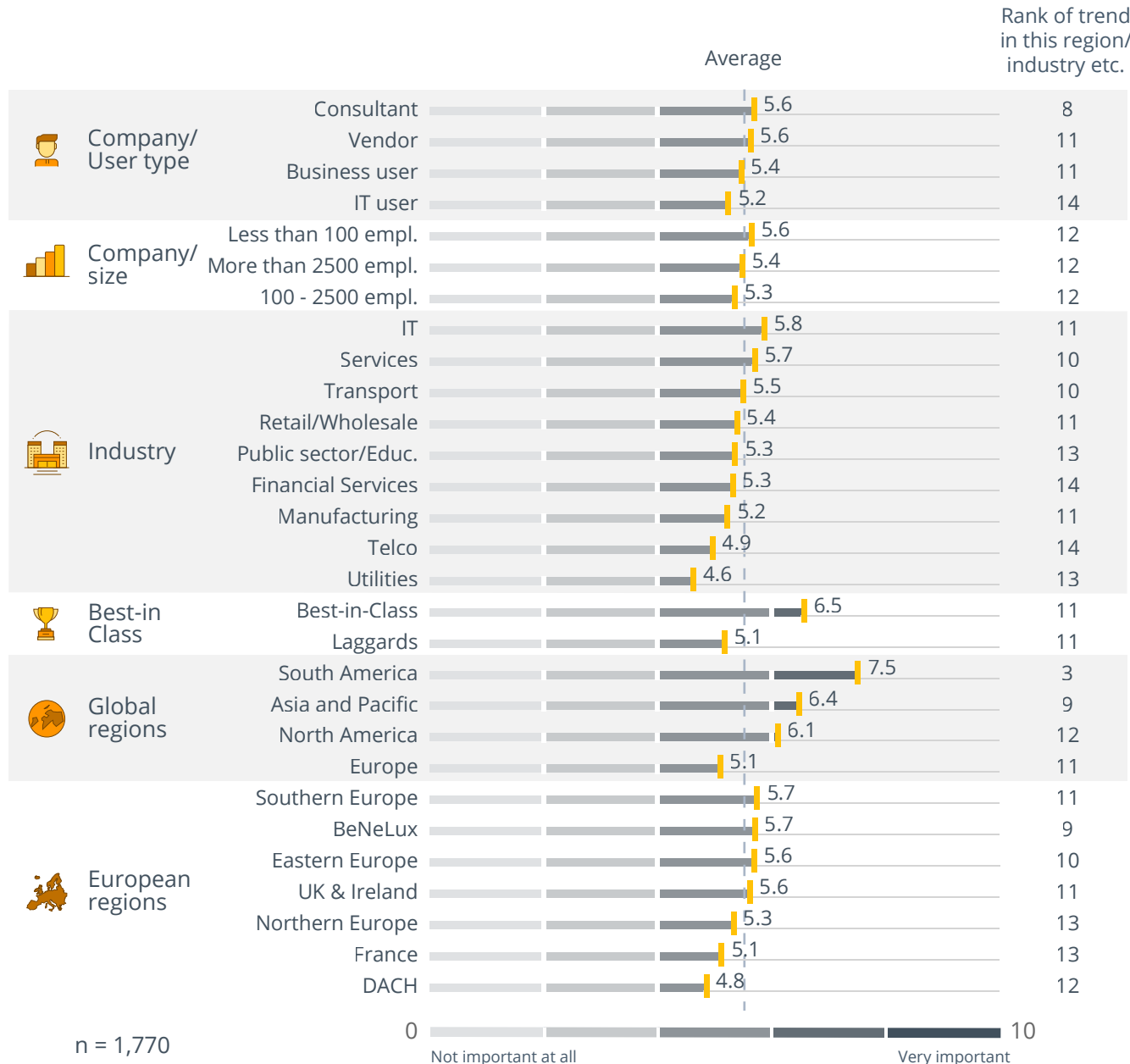
Line-of-business and IT decision-makers and managers need to assess which use cases to tackle, the level of priority advanced analytics should have in the company as a whole, which roles are required (and with which capabilities), and which technology fits best. Many companies have now moved on from experimentation to the actual deployment of AI. Here, new DevOps and MLOps-enabled products and cloud services have greatly reduced complexity. Additionally, considerations of bias in algorithmic decision-making and ethical standards for such solutions are gaining in importance.

Integrated Platforms for Performance Management (PM) and Analytics



A major trend in South America, but less relevant in the DACH region and in utilities.

Integrated Platforms for PM and Analytics



Viewpoint

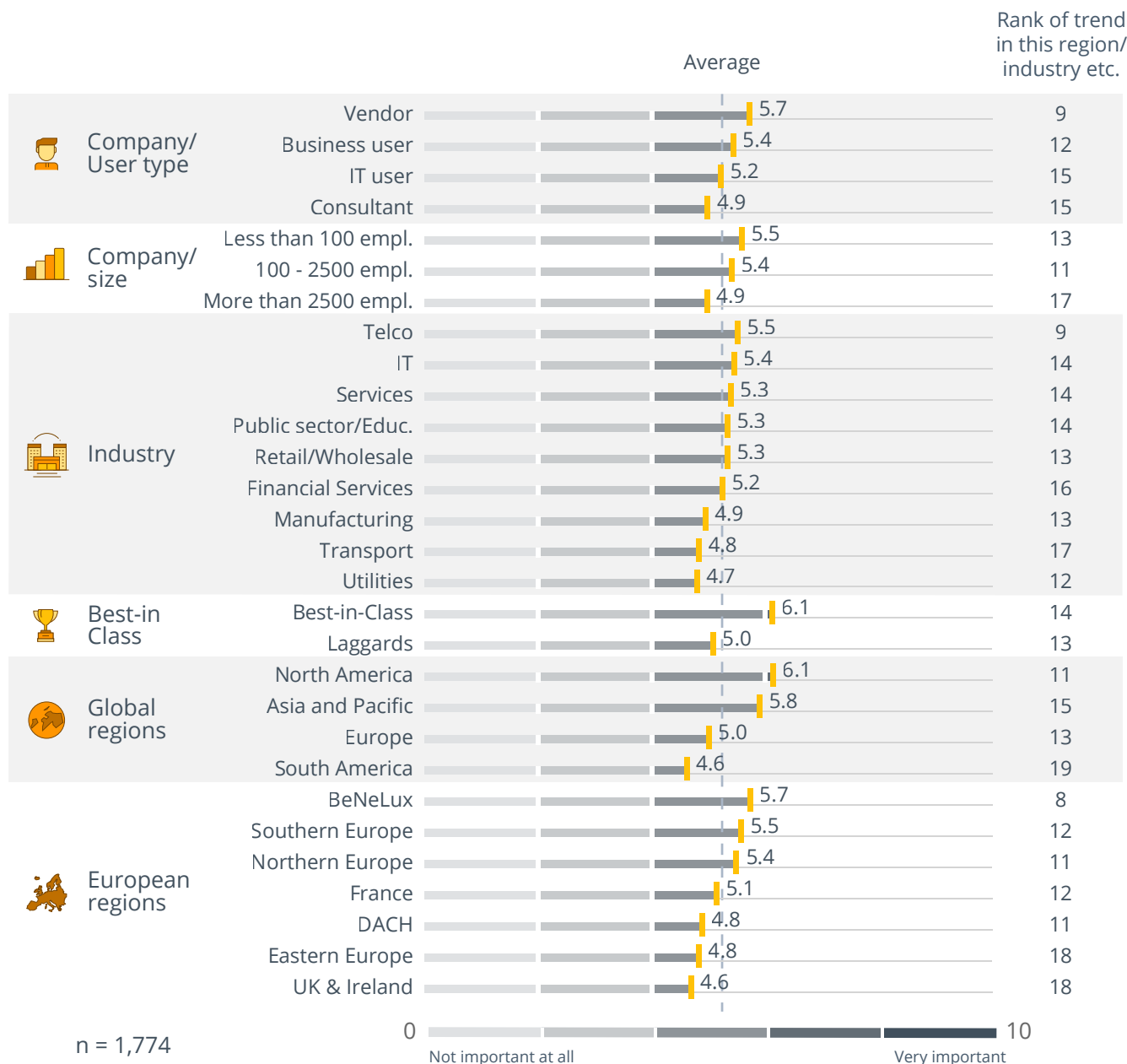
Decision-making in an increasingly complex and volatile world requires transparent plans and data analyses. The seamless integration of performance management (particularly planning) and analytics functionality helps to support decision-making processes optimally. Best-in-class companies and users know that there can be no transparent decision-making without supporting functionality for planning, reporting, analysis and dashboarding as well as financial consolidation. Having all these options in one common and integrated platform is a decisive factor for sustained success. This integration has been one of the most stable and relevant trends in the market for years and vendors are equipping their software tools accordingly. The integration of planning and analytics functionality is particularly important for leveraging modern planning approaches such as predictive planning and forecasting based on statistical methods and machine learning.

Integrated platforms for performance management and analytics are equally relevant for all companies. Best-in-class companies in particular have invested heavily in specialized software solutions to integrate performance management and analytics processes. The benefits from this effort have been empirically proven. Supporting performance management and analytics on an integrated data platform with an integrated tool is a goal worth investing in.

Embedded BI and Analytics



Embedded BI and analytics is prominent in North America, but less important in UK & Ireland and South America.



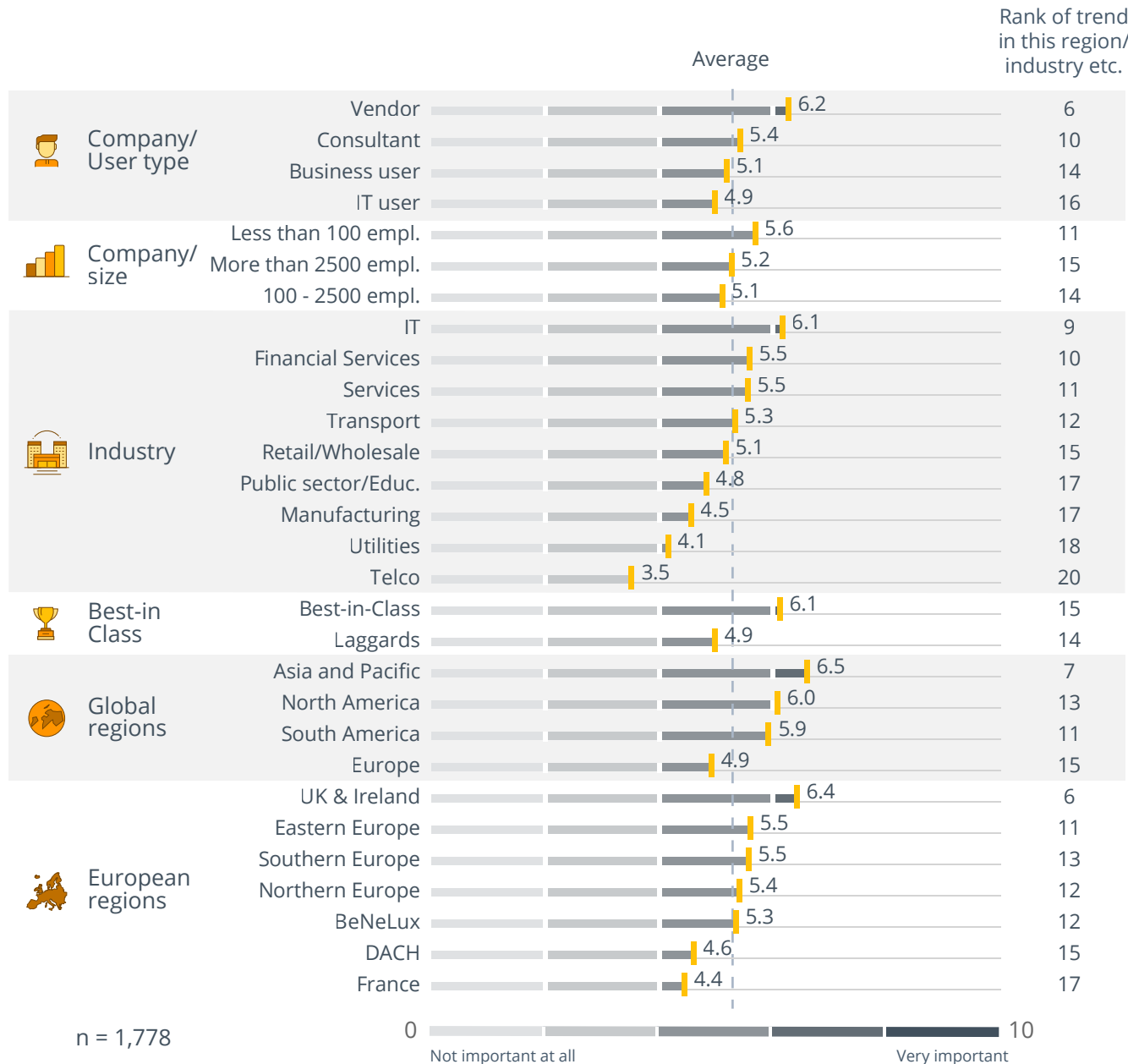
Viewpoint

Embedding intelligence in operational applications is growing steadily in popularity. From dashboards to prediction and optimization models, users get insights directly in their specific operational processes and can act on the findings – closing the classic management loop from information to action. Embedded BI and analytics enables users to derive information rapidly by themselves without having to involve the IT department or power users. In effect, many more people gain access to information and BI capabilities, making BI more pervasive or ‘democratic’. It even allows for automated processes where no active user request is needed to initiate data analysis or where actions are based on data-driven decisions. However, this operationalization of BI and analytics implies various challenges. For example, clarifying the responsibilities of the BI/analytics and application teams, integrating operational BI in a holistic data and analytics strategy that also includes classic and explorative BI, and deciding whether to “make or buy” embedded functions. Also, the broad approach of automating decisions through embedded models and rules brings about completely new possibilities and challenges.

Cloud for Data and Analytics



Cloud for data and analytics is especially popular Asia & Pacific, but less popular in the telecommunications and utilities sectors.



Viewpoint

The global trend of running applications in a cloud environment started to branch out into the analytics domain about twelve years ago. Start-ups were founded to disrupt the established vendors with a platform or software-as-a-service business model. The incumbent vendors, who typically generated their revenues from on-premises implementations, followed suit and now nearly every analytics, CPM and data management vendor offers a cloud-based solution.

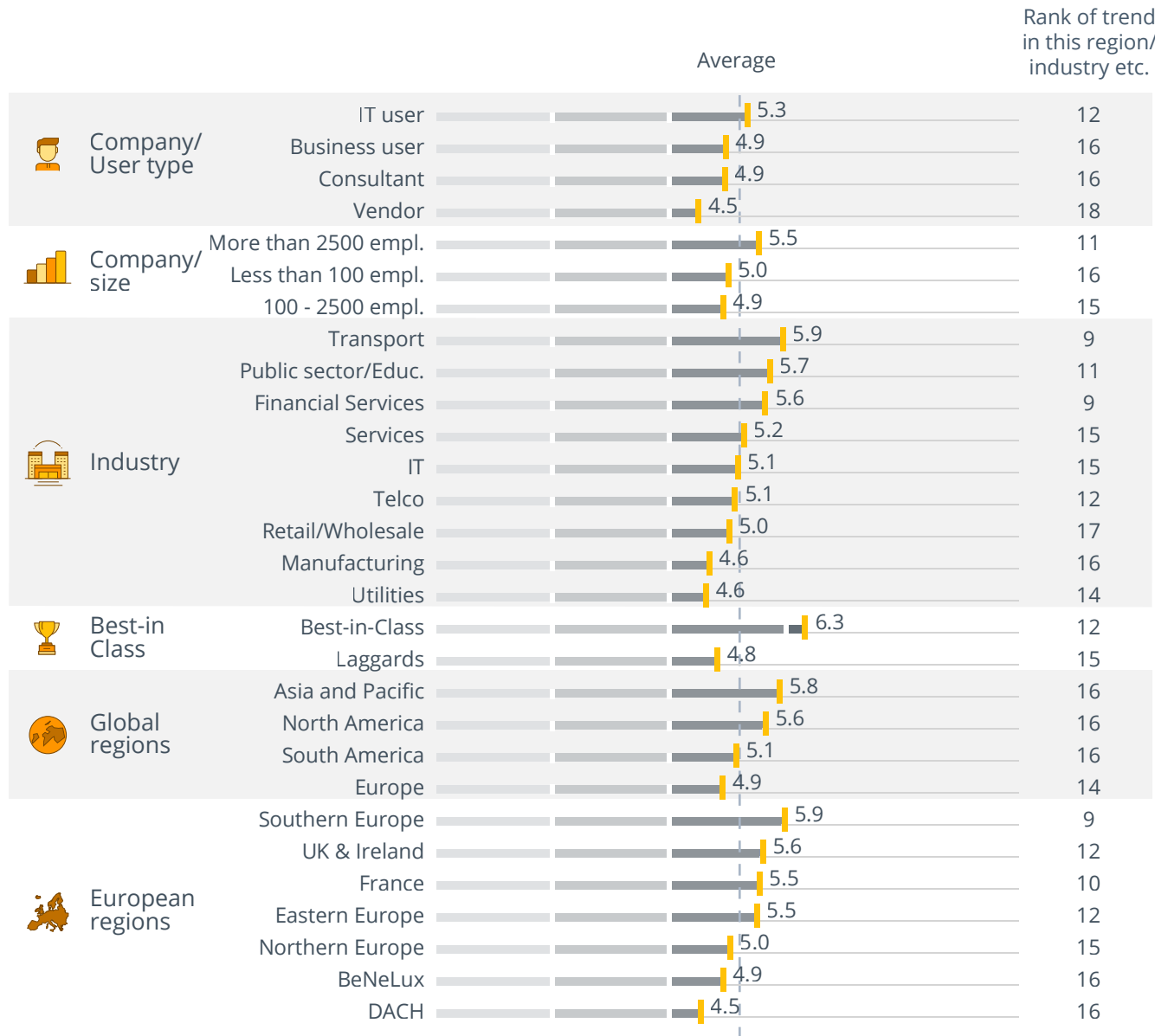
Cloud analytics and data management now have similar functional capabilities to their corresponding on-premises products. Many newer products are now either cloud-only or the cloud version provides more functions than its on-premises equivalent. We see this from the large software vendors, but also from some of the specialists in the market.

However, the adoption rate for cloud analytics and data management deployments is still quite low at around 30 percent of all projects. Looking only at projects that started less than two years ago, 48 percent are implemented in the cloud. We expect the overall level of cloud deployments to rise in the future, as many BI and data warehouse installations are growing old and will have to be modernized.

Analytic Teams/Data Labs



Especially relevant in best-in-class companies and the transport sector, but not so much for vendors.



n = 1,756



Viewpoint

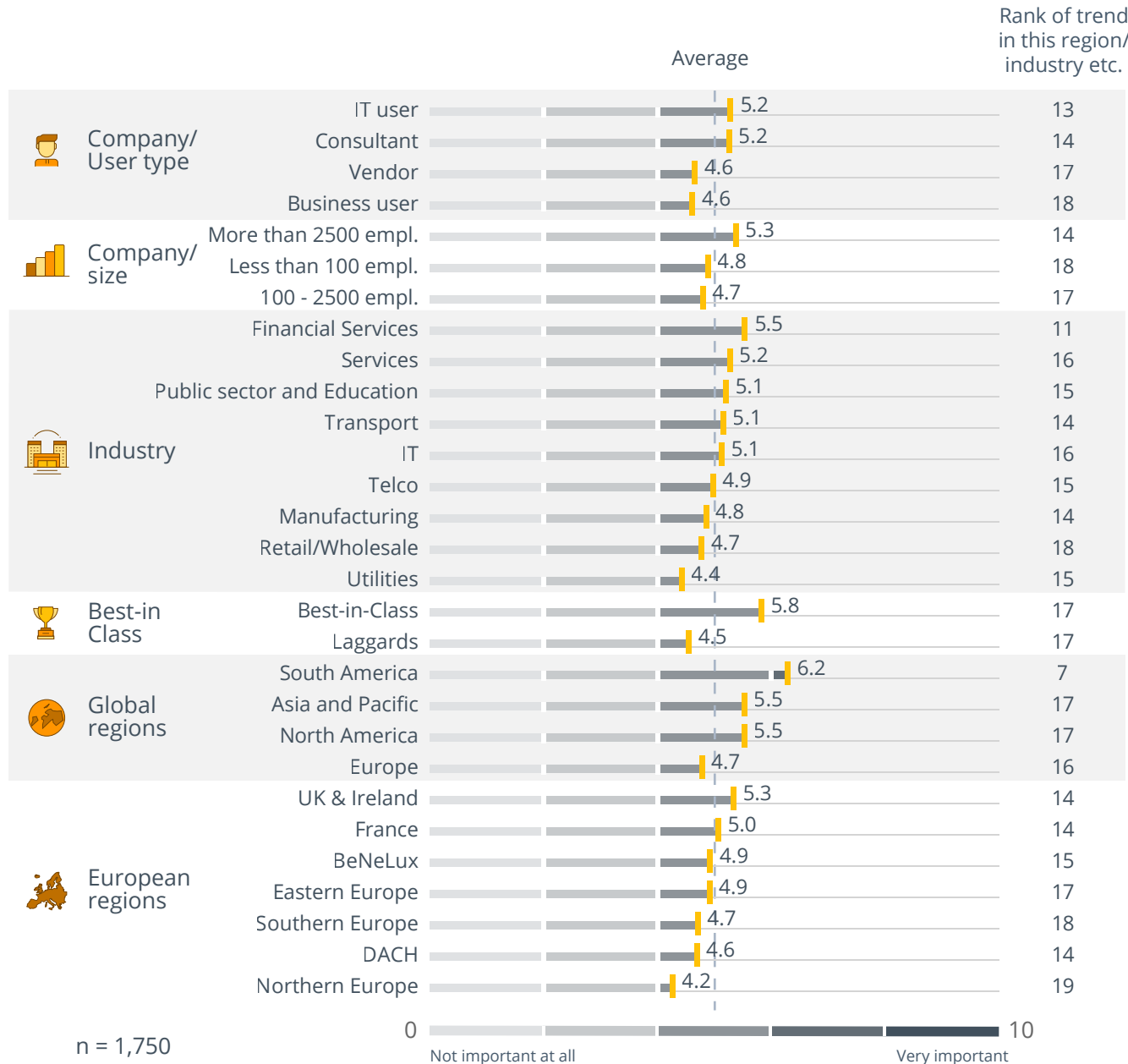
Data science is the generic term for processes that generate knowledge out of data using methods from statistics, machine learning, artificial intelligence and operations research. Data labs are separate organizational units, specifically designed to conduct the first project steps in data science projects within the organization. They offer a space for design thinking and experimentation, aside from established processes in the organization. Data labs require investment in personnel as well as new technologies to store, process and analyze data.

Against that backdrop, it is not surprising that data science and data labs are of increasing importance in larger companies. Businesses in many different industries are adopting data science and data labs. The investment cost for data labs has decreased significantly over time as more software and cloud services providers have hit the market and general competition has increased. However, considerable investment in terms of staff is still required. Integrating data labs and analytics teams poses new challenges and requires revised organizational approaches to link data labs, IT departments and business units. Many companies therefore integrate data scientists into IT or line of business. This has many advantages, especially for the operationalization of analytics solutions.

Data Catalogs



South America and best-in-class companies value data catalogs very highly. Northern Europe sees them as less relevant.



Viewpoint

Data is essential for BI and analytics and thus also for expanding a company's ability to respond to change through digitalization. However, the ability to use data is no small matter. Data that is incomplete, inaccurate or inaccessible hinders the BI and analytics process and impairs value creation from data. The desire for a central data store can therefore be great, but also very complex to implement.

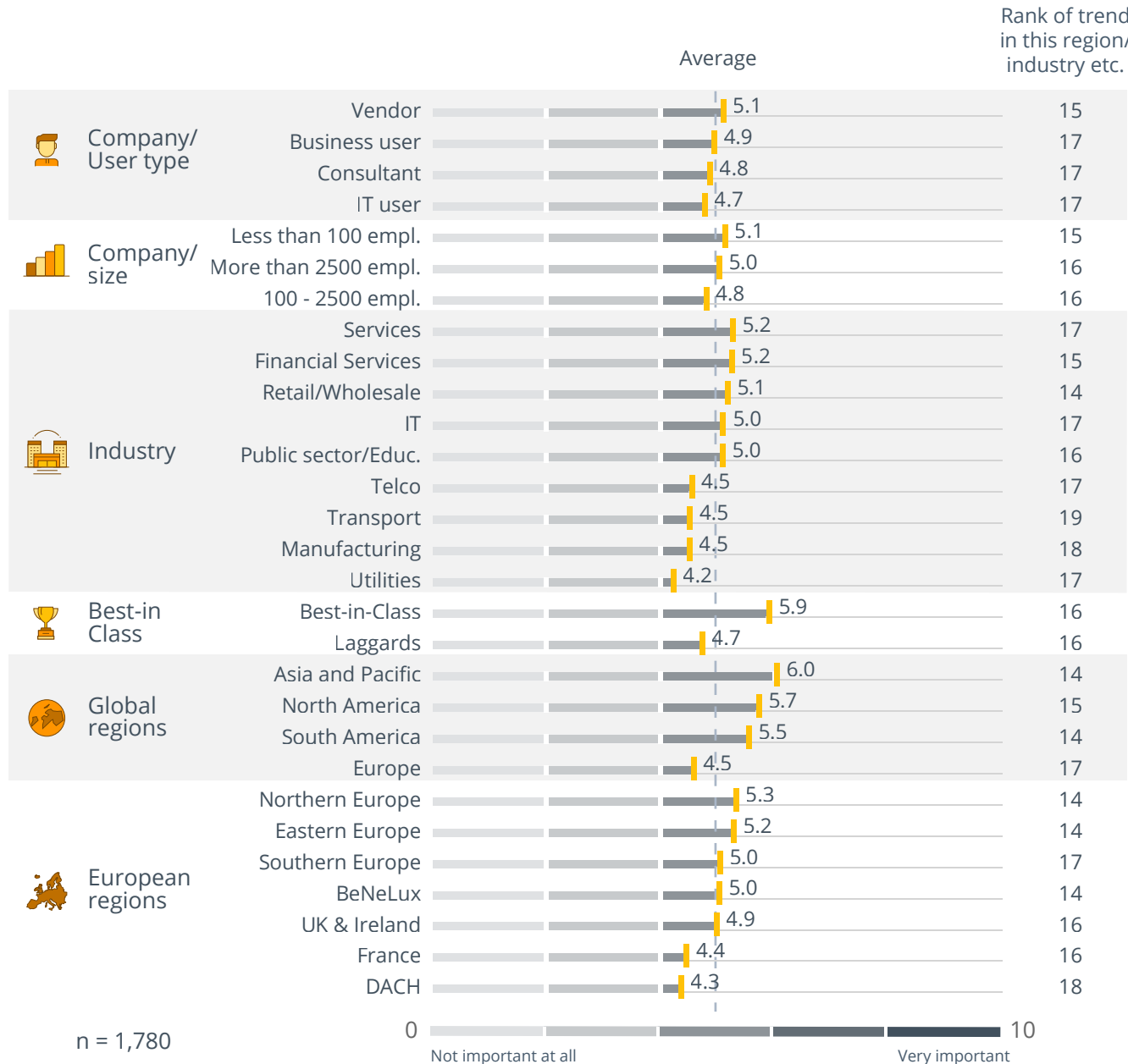
A solution to these challenges is seen in the deployment of a data catalog. Data catalogs are designed to register, catalog and link data in order to make it findable and usable for 'everyone'. This helps to fulfill regulatory as well as business requirements. It is made possible by describing data objects and their relationships with metadata without having to physically integrate data. The use of a data catalog, however, requires a different way of thinking and an awareness that data catalogs must be actively maintained. Technology can assist in this process with connectors to different types of sources, workflows, UIs and collaboration functions as well as lineage analysis and cross-references to automate metadata ingestion and preparation. But building a data catalog and keeping it alive is much more of an organizational challenge.

Decision Automation



Decision automation is prominent in Asia & Pacific, but less relevant to organizations in the utilities sector.

Decision Automation



Viewpoint

The primary goal of BI and analytics today is to enable decision-makers to make better informed decisions. However, the number of processes and decision-making situations in which a person should or can no longer be asked to make decisions is increasing. This is the case when a large number of decisions have to be made in a very short time, the amount of data to be processed for decisions is very high or the complexity of the correlations that influence a decision becomes too high for humans to process.

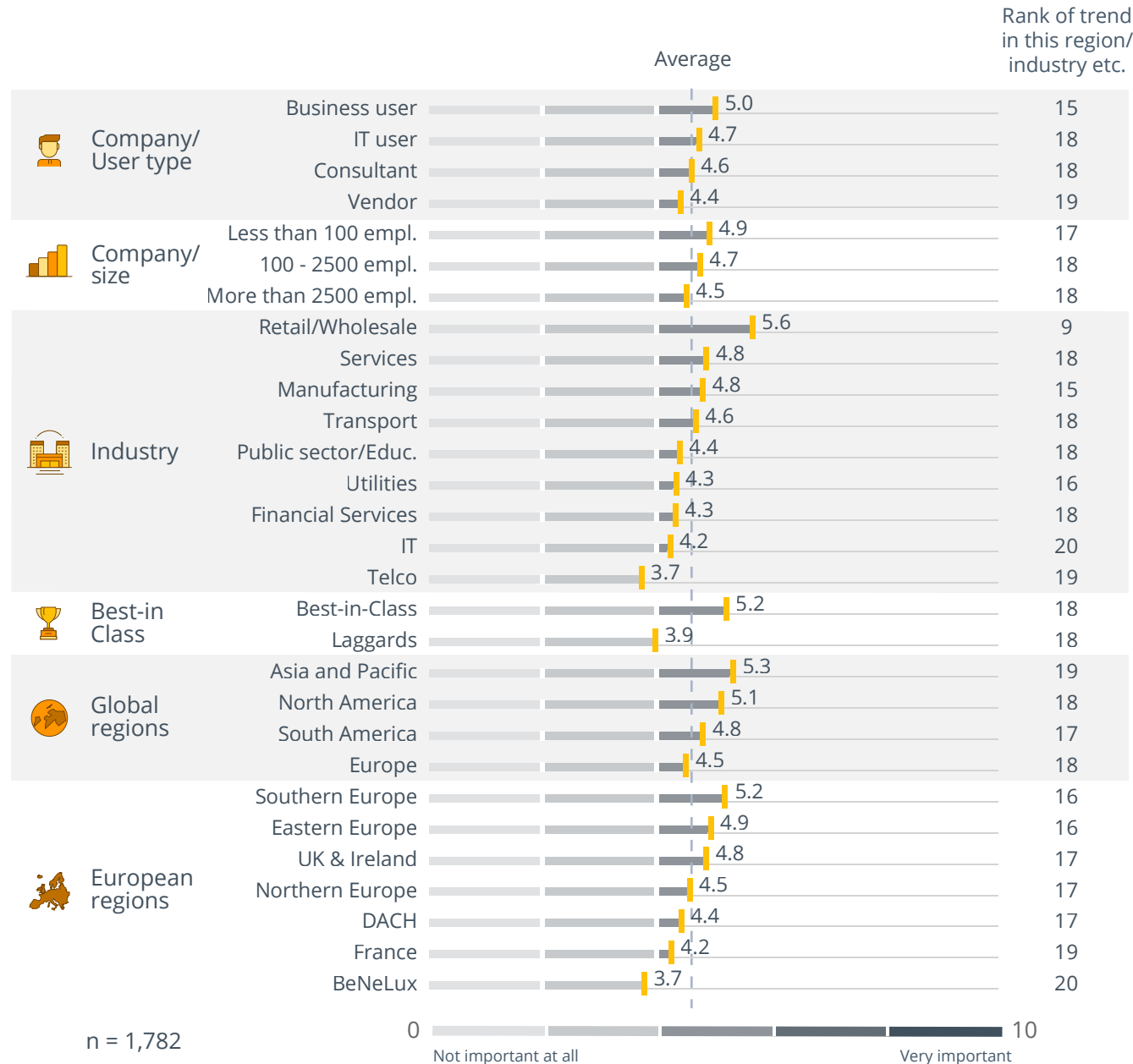
Initially, this affects rather simple operational decisions that have to be made within a clear framework of a few decision options. The basis for this is a set of rules or, increasingly, models that can be built up using statistical or machine learning methods.

Examples of automated decisions already exist today - in the detection of fraud in financial transaction data, dynamic pricing in online retail and in the scheduling of orders in service, production or logistics processes. In these examples, the shift of the human role from decision-maker to creator and supervisor of decision models has already happened.

Mobile BI



The retail/wholesale sector and Asia & Pacific regard mobile BI as very important. BeNeLux is some way behind.



Viewpoint

Mobile BI is one of the most curious trends in the BI and analytics market. At the beginning of the 2010s, its popularity increased rapidly. However, only a few years later, it rarely features in the marketing messages of BI and analytics vendors. This is because its anticipated level of use never really materialized. By 2017, the share of users taking advantage of mobile BI had leveled out at around 30 percent. A further 30 percent (approx.) do not even believe the trend would be useful to them.

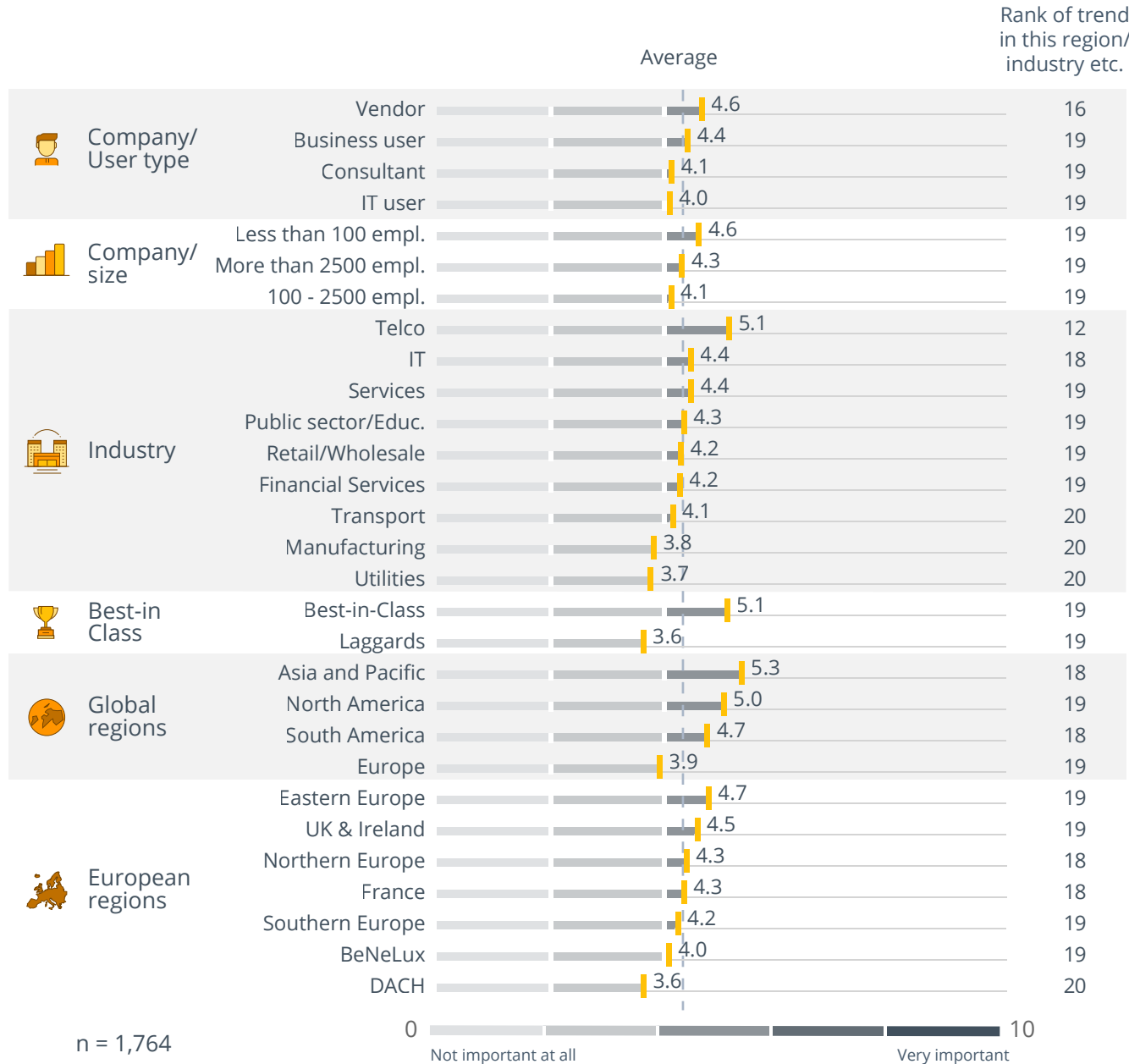
On the vendor side, a revival occurred with the HTML5 standard. Most BI and analytics vendors started to offer at least an HTML5 browser for mobile-optimized applications. Others have, in part, reinvested in native mobile applications.

Besides the display of important content to consumers, mobile BI has great potential to support operational processes while simultaneously increasing the penetration of BI within organizations. With the rising importance of using information to drive actions in operational processes, mobile BI plays an important role as an information delivery channel.

Augmented Analytics



Best-in-class companies value augmented analytics much more than laggards do.



Viewpoint

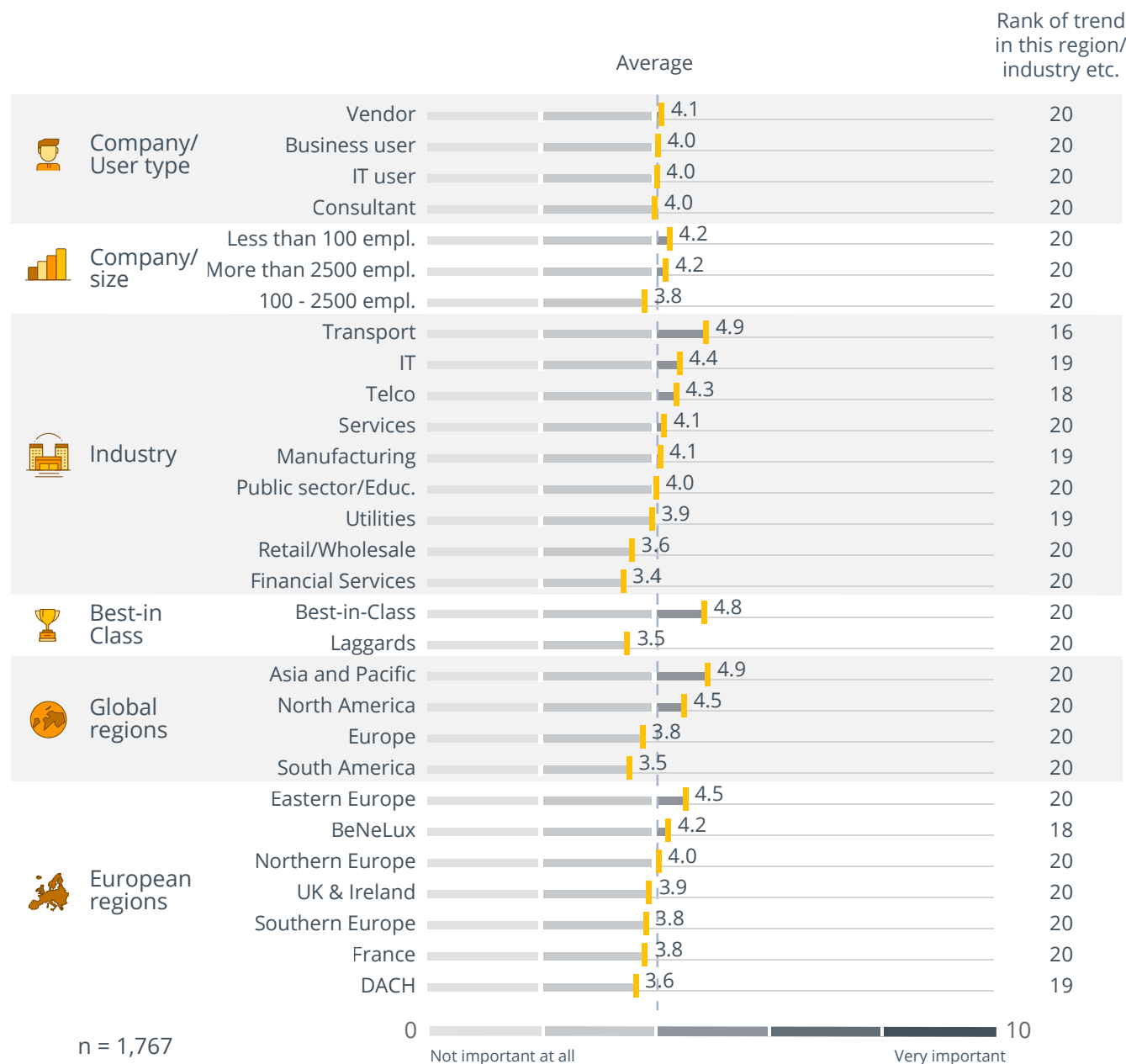
Augmented analytics supplements human capabilities with machine learning to couple creative problem-solving with unrivaled pattern recognition, thus getting the best of both worlds. This approach plays an increasingly important role in data preparation, visualization and discovery. The major goal is to make analytics and BI easier to use to lower the entry barrier for casual users and at the same time increase the efficiency and effectiveness of experienced business analysts.

Augmented analytics leverages machine learning to help business users identify correlations, clusters, outliers and trends in data. The addition of features such as natural language queries attracts more users to analytics as they can get answers simply by searching data in a Google-like manner. Additionally, users are presented with automated insights that are explained in natural language too. Beyond democratizing access to valuable data sources, users are actively assisted when preparing data or creating visualizations, dashboards and reports. Leading tools recommend steps to correct data quality issues or the best way to visualize data depending on its nature.

IoT Data and Analytics



IoT data and analytics is most relevant in the transport and IT sectors, but not so much in financial services.



Viewpoint

Internet of things data analytics (IoT Analytics) is a much-discussed topic in certain industries. Companies are asking themselves how they can work with information generated by machines, their products or other “things” and transform it into valuable outcomes.

Modern IoT concepts and technologies allow companies to monitor all kinds of devices from machines and vehicles to wearables. They enable better management of operational processes through real-time data, as well as future improvements through predictions or data-driven business models. An increasing number of companies are now offering such services to their customers, thus expanding their service portfolios into new business areas.

The data being generated by sensors and sensor-enabled devices is different to the transactional data used for traditional BI purposes. Depending on the use case, IoT data can be less structured and less processed, appear in high data volumes or be generated in real-time. The diversity of IoT data means that a new data architecture, tool set and processes are necessary to process, store and run effective analysis on that data.

Recommendations





BI/analytics and data management have been among the most important IT-related topics in the business world for a long time. The high importance rating of many of the trends covered in

this report also supports this observation. And with digitalization as a primary strategic initiative for many companies, analyzing and managing data has become even more vital. After all, data and analytics

are at the core of the digitalization of processes and business models. Based on our survey findings, we have six recommendations on how best to embrace the trends described in this study:

#1 | Venture into trending topics

The best-in-class companies in this study show that there are substantial benefits to be attained from adopting BI trends. Start with pilot projects that can show the value of new approaches to BI and data. If possible, try piloting use cases that incorporate different departments and processes. Also, addressing several trends at the same time in combined initiatives can be useful, for example, making data discovery, self-service BI and data integration capabilities available while putting a high priority on data quality and master data management in an accompanying data governance effort.

#2 | Train your staff

Start training your existing staff while scouring the labor market for technical and analytical expertise. New technologies and applications require specific resources and know-how. The success of digitalization also depends on an openness and culture to embrace new use cases for data and analytics. However, people with the necessary skills and mindsets can and should be sourced from within, as well as outside of the organization. Given all the exciting developments in the field of data and analytics as well as the rising strategic importance of data literacy, companies need to invest in the skills required to leverage data, technology and analytics.

#3 | Pay attention to data governance

Organizations seem to be aware that the best looking dashboards or statistical models are worth nothing if the data represented is flawed. Business intelligence does not make a lot of sense without comprehensive data integration and data quality initiatives, but these have to be backed up with the right level of attention, resources and funding. Organizational backing of data quality by implementing data governance concepts such as data ownership and stewardship processes are just one example of this.

#4 | Implement data governance

Enabling your business user community through self-service BI and possibilities for reporting, analysis, data discovery and visualization is a good

idea, as long as there is an agreed data and tool governance framework. Ideally, IT departments or BI units should align very closely with key and

power users across the organization to introduce the trusted and accepted governance of data and analytics.



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are at the core of the digitalization of processes and business models. Based on our survey findings, we have six recommendations on how best to embrace the trends described in this study:

#5 | Modernize your information architecture

Organizations should review their existing information architecture to ensure it can support the level of agility required, handle large volumes of poly-structured data (also in real time where needed) and support rapidly growing demand for big data and advanced analytics. It can also be a good idea to create a data lab adjacent to the BI factory to better support explorative approaches to BI with data discovery or predictive analytics. Data warehouse modernization is obviously an important trend. Despite all the hype around new topics such as big data, data lakes and advanced analytics, the harmonized and quality-assured data foundation data warehouses bring is still required but, in many cases, the technology and processes need to be modernized.

#6 | Be aware of the challenges of self-service analytics

BI leaders need to understand the various data analysis requirements in their organizations and the possibilities and approaches offered by modern tools. Self-service has a different set of requirements per user group. Set-based, visual, real-time and predictive analytics are not separate, but rather complementary capabilities that are becoming increasingly important. The decision-making culture of your organization, the available skills, and the identification and promotion of use cases for more data analysis are all key aspects to consider.

#7 | Get ready for a data-driven culture

Establishing a data-driven culture requires the encouragement of critical thinking as well as being willing to hand responsibility for data to business users. Organizations have to be aware that an in-depth cultural change is time-consuming and will probably face resistance. Support from facilitators such as external consultants and internal champions can help in the tasks of setting up a roadmap, facilitating change and a shift of mindset, as well as defining a data architecture and corresponding tools that foster data-driven processes.

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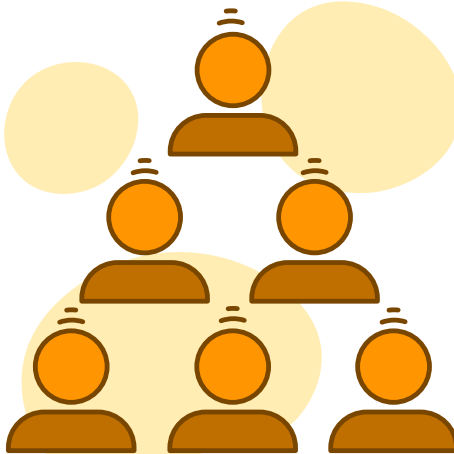


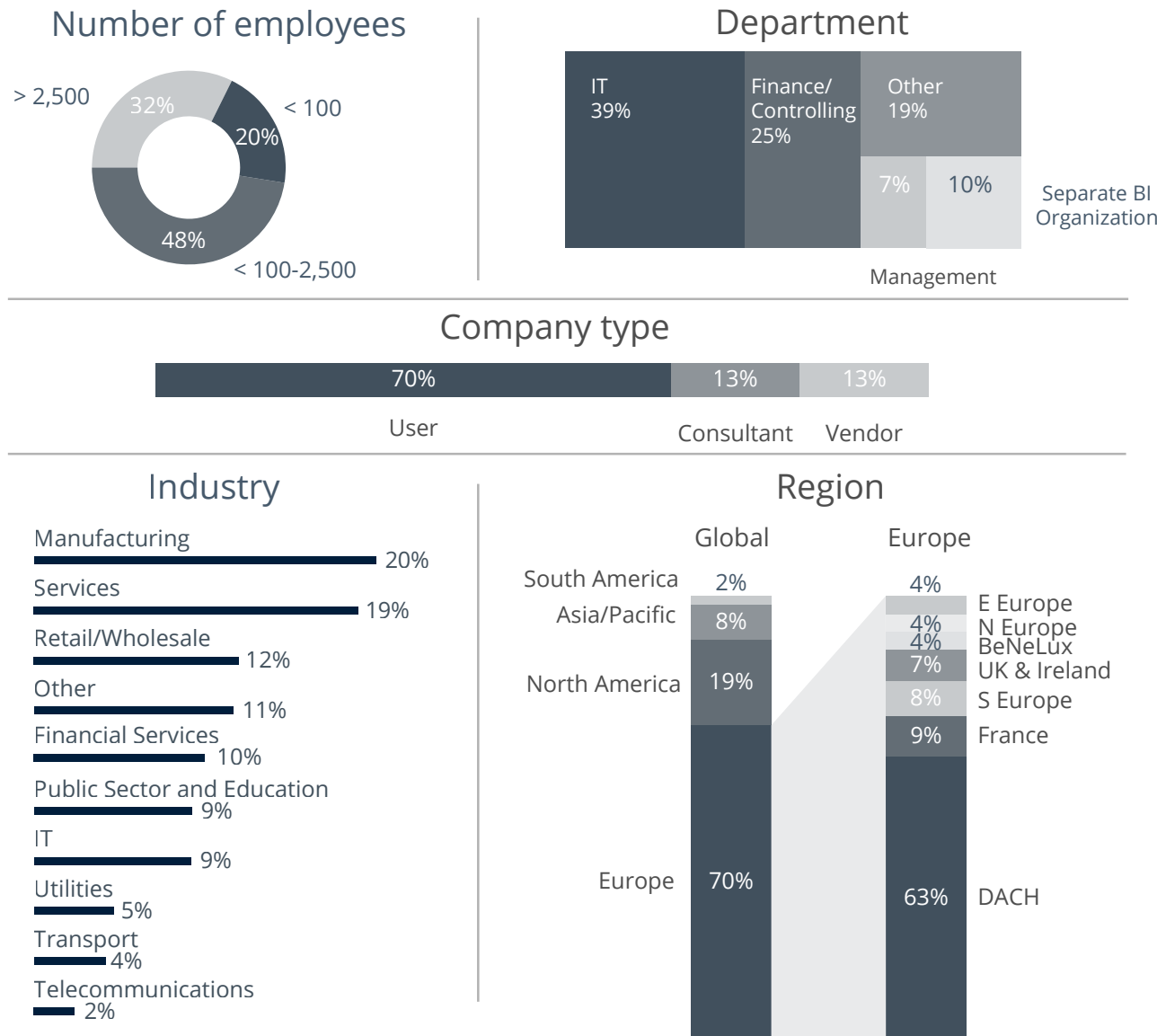
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Sample





Information on the survey

The data used in the Data, BI and Analytics Trend Monitor 2022 was sourced from an online user survey conducted worldwide in the summer of 2021. BARC promoted this survey on websites, at events and in email newsletters. After data cleansing, a total of 2,396 survey responses remained. Respondents came from a wide range of industries, countries, professional backgrounds, company types and sizes.

Participants were asked to rate each trend on a scale from “very important” (10) to “not important at all” (0). We use a weighted scoring system (from 10 to 0) to derive a composite score for each of the trends based on their level of importance. It is a dimensionless number with an arbitrary value, but as long as the weighting system remains constant it can be used for comparisons between segments of the sample, such as the sample for industries or regions, to name just two.

‘Best-in-class’ companies comprise the top 10 percent in terms of achievement of specific BI-related business benefits (e.g., “Faster reporting, analysis or planning” and “Increased competitive advantage”) in this survey. ‘Laggards’ represent the lowest 10 percent.

BARC Company Profile



BARC (Business Application Research Center) is one of Europe's leading analyst firms for business software, focusing on the areas of data, business intelligence (BI) and analytics, enterprise content management (ECM), customer relationship management (CRM) and enterprise resource planning (ERP).

Our passion is to help organizations become digital companies of tomorrow. We do this by using technology to rethink the world, trusting data-based decisions and optimizing and digitalizing processes. It's about finding the right tools and using them in a way that gives your company the best possible advantage.

This unique blend of knowledge, exchange of information and independence distinguishes our services in the areas of research, events and consulting.

Research

BARC studies are based on internal market research, software tests and analyst opinion, giving you the security to make the right decisions. Our independent research brings market developments into clear focus, puts software and vendors through their paces and gives users a place to express their opinions.

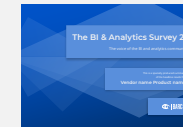
Events

Decision-makers and IT industry leaders come together at BARC events. BARC seminars in small groups, online webinars and conferences with more than 1,000 participants annually all offer inspiration and interactivity. Through exchange with peers and an overview of current trends and market developments, you will receive new impetus to drive your business forward.

Consulting

In confidential expert workshops, coaching and in-house consultations, we transform the needs of your company into future-proof decisions. We provide you with successful, holistic concepts that enable you to use the right information correctly. Our project support covers all stages of the successful use of software.

Other Surveys



The BI & Analytics Survey 22 is the world's largest annual survey of BI/analytics users. Based on a sample of over 2,500 responses, The BI & Analytics Survey 22 offers an unsurpassed level of user feedback on 30 leading BI solutions. To see the results, visit: <https://bi-survey.com>



The BARC survey *The Future of Reporting* investigates how and why companies should modernize their reporting. It is based on a survey of 600 participants from 58 countries across a range of industries. [Download here.](#)



The Planning Survey 21 is BARC's major annual survey of planning software users. With feedback from over 1,400 respondents, twenty-one market-leading planning products are evaluated and compared in detail. Find out more at <https://bi-survey.com>

InfoZoom

www.infozoom.com

InfoZoom is a unique software solution to quickly gain insights into large data volumes and various data sources without special IT skills. There is no other tool that facilitates interpreting and modeling data like InfoZoom does.

Users of all departments are enabled to analyze their business data with a few clicks and create clear reports. Departments can carry out their own analyses and thus make sound decisions in time. Users may identify critical data constellations like duplicates, format errors, special characters and data gaps at a glance. As a perfect addition to ERP, CRM, and BI solutions, InfoZoom complements systems in the fields of ad-hoc data analyses and agile data quality management.

On the basis of the InfoZoom partner program, several specialized providers enhance their products and portfolios with high-performance functionalities for ad hoc reporting, self-service BI and data quality management. The InfoZoom Academy supports users and partners with its sophisticated training program.

InfoZoom is developed and distributed by humanIT Software GmbH. humanIT Software GmbH started as a spin-off of the Fraunhofer institute in 1997 and is now part of the proALPHA group.

Our team is part of the proAlpha Advanced Analytics business unit, which analyzes Big Data mega trends and develops innovative and integrated solutions for applications like the basic analysis of historical data, descriptive and predictive analytics, and prescriptive analytics involving artificial intelligence and machine learning.



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Logi Analytics

www.logianalytics.com

Logi Analytics, an insightsoftware company, is the leading provider of award-winning embedded analytics solutions for software teams, headquartered in McLean, Virginia, with teams located in Ireland, England, China, and Ukraine, and India.

With a robust portfolio of low-code/no-code analytics development platforms, Logi Analytics allows software teams to easily build embedded dashboards, cutting-edge visualizations, and highly precise pixel-perfect operational reports into any enterprise software application.

With the successful launch of Logi Composer in 2020, the company brings to software teams a cloud-ready, secure analytics development solution that enables them to exceed users' personalization and self-service requirements. Composer is built with a microservices architecture that optimizes compute resources by scaling up and down for superior performance. With a broad range of out-of-the-box Smart Data Connector that enable fast access to data, and Query Engine's Fusion technology for multi-source analysis, Composer can connect to any data source and process thousands of concurrent user requests. Iron-

clad security capabilities including SSO offers precise control over user and data access in multi-tenant deployments.

Logi has elevated pixel-perfect and operational reports to the next level with Logi Report's embedded reporting capabilities built for precision, performance, and scale. Application teams can leverage the no-code design environment to seamlessly embed highly customized reports and take advantage of the large scale, dynamic report distribution with clustering, bursting and scheduling to millions of end users in seconds.

Logi Analytics is the only analytics provider exclusively focused on embedding analytics in commercial and enterprise applications and is committed to the success of the world's software teams with the most intuitive, developer-grade embedded analytics solutions. Every day application teams use Logi's suite of embedded analytics solutions to deliver a superior user experience, accelerate their roadmap and time-to-market, while simultaneously reducing development costs.



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MicroStrategy

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MicroStrategy (Nasdaq: MSTR) is the largest independent publicly traded business intelligence company, with the leading enterprise analytics platform. Its vision is to enable Intelligence Everywhere™. MicroStrategy provides modern analytics on an open, comprehensive enterprise platform used by many of the world's most admired brands in the Fortune Global 500.

Optimized for cloud and on-premises deployments, the platform features HyperIntelligence®, a breakthrough technology that overlays actionable enterprise data on popular business applications to help users make smarter, faster decisions.



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TARGIT

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TARGIT delivers detailed insights and makes data accessible for everyone, with an easy-to-use solution that integrates with existing data sources and is flexible enough to evolve over time. TARGIT delivers value long after launch, with reliable support services, insightful recommendations, and a people-first business model.

The company's BI and analytics platform, TARGIT Decision Suite, combines an intuitive, user-friendly frontend with a robust backend designed for growth. The platform integrates with other tools and pulls data from the full range of sources to support the entire data ecosystem.

TARGIT leverages decades of industry expertise to help customers turn data into real business impacts, giving business users the tool they need to extract actionable insights that inform decisions, increase productivity, and improve profitability.

Key Benefits

- Usability: TARGIT is designed for every employee, not just the technology experts, with a platform that's easy to use and im-

plement across the entire organization.

- Agility: TARGIT Decision Suite is valuable yet flexible out of the box. Users can integrate, customize, and adjust quickly and efficiently to unlock new values or track goal-based metrics, all from within the same platform.
- Partnership: TARGIT partners with technology providers and consultants to compound the value of its solutions, extend its reach, and maintain a robust network of experts to support customers.
- Customer-centricity: TARGIT keeps customer relationships at the center of everything. They aren't just technologists focused on software. They're people empowering people.

TARGIT is consistently recognized as a "Leader" in multiple categories and peer groups, with increasingly high satisfaction scores in BARC's The BI & Analytics Survey several years in a row.

Learn more at www.targit.com and follow TARGIT on LinkedIn: <https://www.linkedin.com/company/targit>

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