THE BI SURVEY

12

The Customer Verdict

The world's largest survey of
business intelligence software users

KPIs and Dashboards

This document explains the definitions and calculation methods of the KPIs used in The BI Survey 12.

Table of Contents

Table of Contents 2
Understanding the KPIs 3
Reading the KPI Charts 4
The aggregated KPIs 6
How to use the KPIs 8
Peer groups 8
- Complete sample 8
- Peer groups 8

The KPIs 10
- Business achievement KPIs 11
- Costs 11
- Proportion of employees using product 12
- Big data 13
- Functional usage 14
- Competitiveness 14
- Recommendation 15
- Innovation 15
- Performance 16
- Satisfaction 18
- Agility 19

Understanding the KPIs

The goal of this document is to help the reader spot winners and losers in 'The BI Survey 12' using well-designed dashboards packed with concise information. The Survey includes eleven aggregated KPIs, which can be absorbed at a glance. They are published in 'The BI Survey Analyzer'. It also includes a set of 22 normalized KPIs, which we refer to as 'root' KPIs for each of the 27 products. The 'aggregated' KPIs are aggregations of these root KPIs.

This year we have calculated a set of KPIs for each of the eleven peer groups. The values are normalized on the peer groups. Peer groups are used to ensure similar products are compared against each other both in fairness to the vendor and for the benefit of the customer. The groups are essential to allow fair and useful comparisons of products that are likely to compete.

The KPIs all follow these simple rules:

- Only measures that have a clear good/bad trend are used as the basis for KPIs
- KPIs may be based on one or more measures from The Survey
- Median figures should be used wherever possible to minimize the distorting effect of extreme outliers
- Only products with samples of at least 20 - 30 (depending on the KPI) for each of the questions that feeds into the KPI are included for each KPI
- Each KPI is normalized so that the overall sample always has a value of 1.0
- The KPIs are calculated so that better-than-average products always have scores of greater than one, while less good products score less than one
- Each KPI has a unique custom-generated scale running from the worst product to the best product

Reading the KPI Charts

The KPIs are presented using simple bullet charts in the documents.

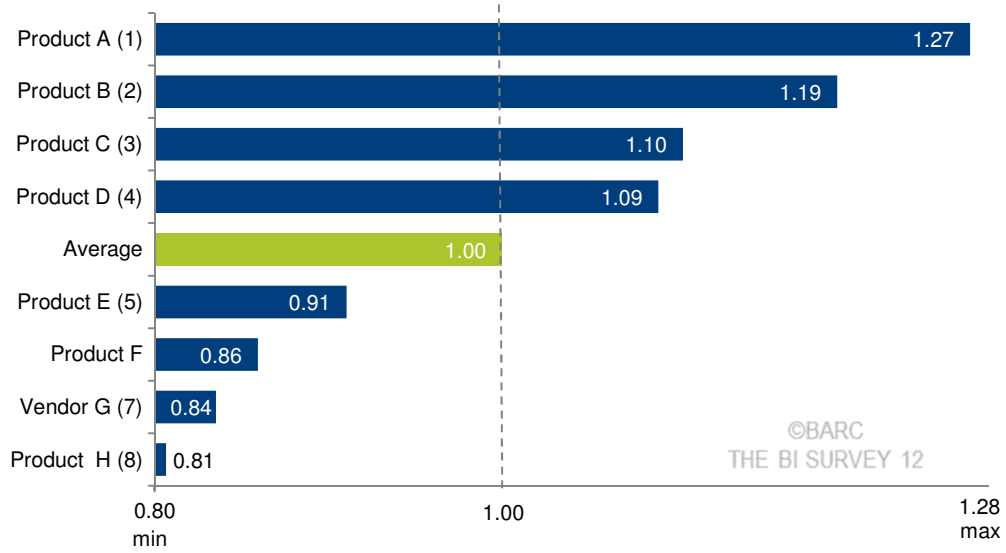

Figure 1: Sorted bar chart used for displaying KPIs in the documents

The products are sorted by value, the better the product the higher the value. The average is displayed as a green bar and separates the products into two groups, the ones that have performed better than average and the ones that have performed worse than average. The scale indicates the minimum KPI of all products as well as the maximum KPI of all products. Ranks are displayed in brackets after each product.

In 'The BI Survey Web App', we use a red/yellow/green color coding system on the KPI charts.

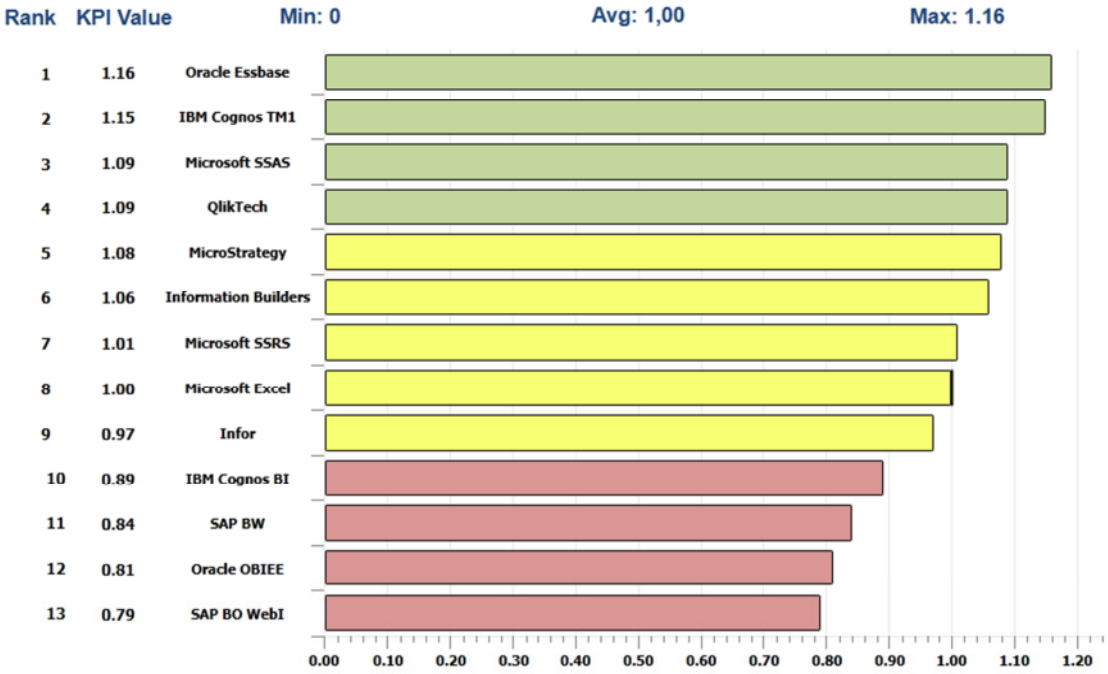

Figure 2: Sorted bar chart used for displaying KPIs in THE BI SURVEY ANALYZER (web app)

Green bars are used to show the top performing products while red bars indicate the products that under-performed in each category.

In 'The BI Survey Analyzer iPad App', we use bullet charts with a red/yellow/green color coding system on the KPI charts.

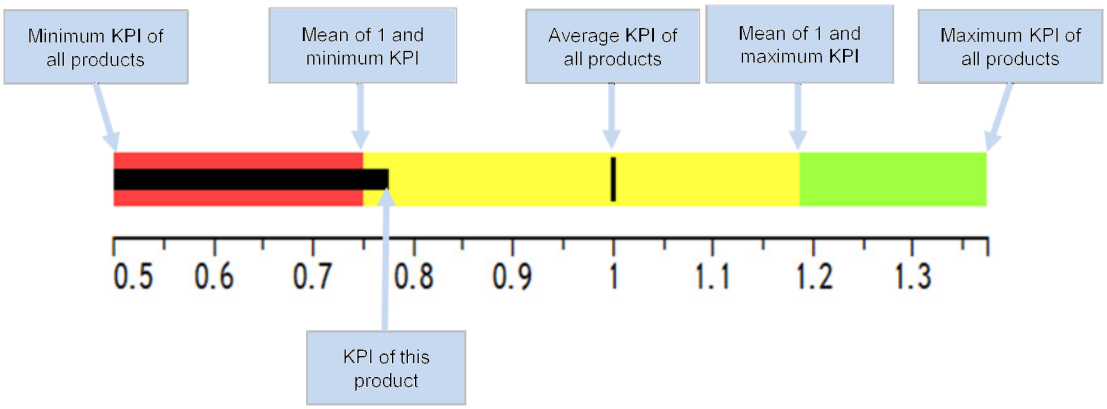

Figure 3: Bullet graphs used for displaying KPIs in THE BI SURVEY ANALYZER (mobile app)

The three color coding system provides additional information about the scale of the graph. This is particularly useful when presenting several KPIs side by side because the scale for each KPI measured is different.

One point to note is that the 1.0 point in our bullet charts is generally not in the mid-point of the color bar – most often, it is displaced towards the left, as the difference between the best KPI and the Survey average is usually more than between the Survey average and the worst product's KPI. This also means that a stack of KPI charts showing different KPIs will not have aligned color bands or scales.

KPIs are only calculated if the samples have at least 20 - 30 data points (this varies from KPI to KPI) and if the KPI in question is applicable to a product. Therefore some of the products do not have a full set of root KPIs. It is important to exclude KPIs based on small (and therefore not representative) samples to ensure that the graph scales are not distorted by outlier KPIs. In such cases, the product is still shown in the tables, but with a blank KPI value and no bar in the bullet graph or the bar chart.
We provide two different types of dashboards for viewing the KPIs. The first type is the Product Dashboard. A Product Dashboard displays all the KPIs for a single product. The second type is the KPI Dashboard, which displays all the products for a single KPI.

The aggregated KPIs

The calculation of the aggregated KPIs is described in the following two tables. The aggregates are arithmetic means.

First level aggregated KPIs are only calculated if all root KPIs are available. Some KPIs are calculated as both an aggregated KPI and a root KPI (e.g. Proportion of Employees).

#	Aggregated KPI	Root KPIs
1	**Business achievement**	Business benefits Goal achievement
2	**Costs**	Costs per seat Seats per admin
3	**Proportion on employees**	Proportion of employees
4	**Big data**	Data volume Variety of data types
5	**Functional usage**	Functional usage
6	**Competitiveness**	Competitive win rate

		Chosen as standard
7	**Recommendation**	Recommendation
8	**Innovation**	Cloud BI Collaboration Mobile BI Visual analysis
9	**Performance**	Query performance Performance satisfaction
10	**Satisfaction**	Product satisfaction, Vendor support Implementer support
11	**Agility**	Project length Self service

Figure 4: Aggregated KPIs and root KPIs

How to use the KPIs

Different readers will have their own views on which of these KPIs are important to them. For example, some people will regard fast query performance as very important, whereas others may regard scalability or cost of ownership as more important.

The aggregated KPIs above provide a good selection from which readers can choose the ones that they regard as key to their requirements.

Peer groups

Complete sample

We use responses from all products to calculate product-independent analysis. A typical question would be: What proportion of all your organization's employees currently make regular use of Business Intelligence software? This question can be analyzed per product, but it can also be analyzed without reference to any specific product to provide insight into the market as a whole.

Products with data points less than 30 are shown among ‘others’.

In The BI Survey Analyzer Web App you will find the results for the complete sample in the ‘Survey Results’ tab and the ‘Cross Table’ tabs.

Peer groups

In The BI Survey 10 we introduced a new concept into our analysis that we refer to as ‘peer groups’. The peer groups are simply groups of products we use when we are comparing the KPIs for lists of products.

The point to the peer groups is to make sure that the comparisons we make in The Survey really make sense. The products are grouped together as we would expect them to appear in a short list for product selection. To make a proper choice, a buyer should first segment the market into the product types that fit his requirements. The peer groups are intended to help the reader with this task. Note that some vendors appear in more than one group.

Peer group	Description
IT Giants	The 'IT Giants' include products from the four largest IT companies.
BI Giants	The 'BI Giants' peer group includes companies with 200m+ annual revenues and a truly international reach.
Enterprise Reporting	The 'Enterprise Reporting' peer group includes products that can provide standard formatted reporting in a large scale enterprise situation (i.e. thousands of users served by a scalable reporting server)
Dashboard	The 'Dashboard' peer group includes products that are focused on creating advanced dashboards
OLAP Analysis	The 'OLAP Analysis' peer group includes products that support analysis in dimensional and hierarchical data models, usually supported by dimensional databases (e.g. financial controlling, performance measurement systems) providing self-service capabilities to business users
Visual Analysis & Data Discovery	The 'Visual Analysis & Data Discovery' peer group includes products that provide advanced visualization features (e.g. heat maps, scatter plots). Usually these tools support set-based analysis to filter and analyze properties of data sets with many records and many attributes (e.g. customer segmentation for campaign management)
Performance Management	The 'Performance Management' peer group includes companies whose projects are predominantly planning projects
SME Project	The 'SME Project' peer group includes products that are primarily used for small and medium sized projects (<500 users)
Large Enterprise Project	The 'Large Enterprise Project' peer group includes products that are primarily used for large enterprise projects (>500 users)

Figure 5: Peer group description

The KPIs

The following sections provide the entire list of KPIs calculated for The BI Survey 12, as well as a description of the calculations.

KPIs are only calculated if the samples (from The BI Survey) have at least 20 or 30 data points, so most of the products do not have a full set of root KPIs. It is important to exclude KPIs based on small (and therefore unreliable) samples to ensure that the graph scales are not distorted by outlier KPIs based on small data samples. In such cases, the product is still shown in the tables, but with a blank KPI value in the bar chart. For example, Microsoft Excel is shown in the 'Data Volumes' table, but with a blank KPI value in the bar chart.

All the KPIs are presented in The BI Survey Analyzer Web application and iPad App, both as Product Dashboards and KPI Dashboards.

Business achievement KPIs

The business achievement KPI is based on a combination of business benefits and goal achievement KPIs.
Business achievement is a measure of the extent to which the product delivers business value and helps organizations achieve their goals.

Business benefits

What we measure
We measure the real benefit of projects after implementation whereas other surveys of business intelligence usage limit their questions to technical or organizational issues.

Why it is important
'Business benefits' is possibly the most important KPI, focusing on bottom-line benefits of BI projects, rather than individual technical aspects.
Business intelligence that does not deliver business benefits is superflous. Unlike core transaction systems, BI projects are optional, not mandatory, so they must pay their way in terms of delivering business benefits.

How we measure
We ask users to judge project benefits based on real measurements the company has made. Using this information we weighted their responses and calculated the BBI. The KPI is a normalized version of this index.
These benefits were evaluated by the participants.

Goal achievement

What we measure
We ask users whether the project reached the goals that were initially set.

Why it is important
Goal achievement may seem every bit as important as the achievement of business benefits. However, we have found there to be a direct link between products and the level of goal achievement.

How we measure
Similar to our business benefit calculations, we ask participants to judge how well goals were achieved and weighted their responses to calculate the goal achievement index (GAI). The KPI is a normalized version of this index.

Costs

The costs aggregated KPI is based on the combination of the cost per seat and seats per administrator KPI.
The costs per seat have a higher influence on the cost issue and therefore have double the weighting.

Cost per seat

What we measure
We measure median license and external implementation fees, and divide these by the number of users. This gives an indication of the internal and external costs in acquiring and running solutions based on the product, on a per capita basis.
We have changed the questions slightly from The BI Survey 10 to 12 as we no longer asked for the number of licences, but for the number of users. Because our

research shows that - with a few exceptions - customers are unconcerned about hardware costs, we did not include these.

Why it is important

While no one can be certain in advance that BI projects will deliver business benefits, it is certain that they will incur significant costs: software license and maintenance fees, implementation fees and hardware costs, plus whatever non-billed internal resources are used. End-users that have budget constraints should place special emphasis on this KPI.

How we measure

In the last BI Survey edition this aggregated KPI favored pure front-end tools, as they naturally incur fewer costs than all-in-one solutions. Now that we are only comparing products within peer groups of similar products these different types of products are no longer compared directly.

Most analysts tend to focus on the total fees paid, but we work out a more useful per capita figure. Maintenance is usually a percentage of license fees (around 20-25 percent) and ongoing maintenance is likely to be related to implementation fees. Thus, license and implementation fees are a good proxy for all external costs.

Cost is a negative factor, so higher costs lead to a lower KPI. The price per seat is standardized by the maximum price per seat and inverted, so the higher the price per seat the lower the KPI.

Seats per administrator

What we measure

We measure the number of full time administrators per user.

Why it is important

Administration overheads are often cited as a major cost issue. However, we see the issue of agility as being even greater. Large teams of administrators tend to be less agile than smaller teams.

How we measure

We ask participants how many administrators and users the system has. The KPI is based on the ratio of these two numbers, increasing with the number of seats in use.

Proportion of employees using product

The proportion of employees KPI is a single KPI in its own group.

What we measure

We measure percentage of employees that use the product.

Why it is important

Many organizations try to avoid having multiple BI silos: small groups of users accessing different, specialist BI products. They prefer to buy products that can be deployed more widely, as such products are easier to support and skills are more transferable.

How we measure
We asked respondents how many employees their company has and how many use the product. The KPI is based on this ratio. Afterwards we calculate a median value by product.

Big data

We define 'Big data' as methods and technologies for the highly scalable loading, storage and analysis of unstructured data. Big data technology can help companies to manage large data volumes, complex analysis and real-time integration of data from a variety of data structures and sources. We have combined the 'data volume' and 'variety of data types' root KPIs to calculate this aggregated KPI.

Data volume

What we measure
We measure the median volume of data being reported in the largest application within the company. This takes into account the data volume dimension of big data.

Why it is important
Most products can, at least in theory, deal perfectly well with any normal application, but they may still be further optimized to suit what their typical customers do, rather than the extreme cases.
This KPI is relevant to organizations with a genuine need to analyze and report on data levels measuring a few hundred gigabytes. Such levels are outside the range that most products are typically used for, even if they can, in theory, handle them.

How we measure
We calculate this KPI based on the median data volume of the data being reported on in the largest application within a company.

Variety of data types

What we measure

We measure the number of "Big Data" types that are relevant for analysis in a company. This takes into account the variety dimension of big data.

Why it is important
We see the variety of data types (e.g. Social media data from Facebook and Twitter, unstructured content from email and office documents, machine data from production systems) used in a company as a positive indicator of the products that need to handle polystructured data.

How we measure
We calculate the sum of data types relevant within a company.

Functional usage

The functional usage KPI is a single KPI in its own group.

What we measure
We measure the amount of tasks that can be covered with a product.

Why it is important
Many companies would like to use a single product for different tasks. This KPI shows the versatility of the product.

How we measure
We asked the participants for which tasks a product is used and then calculated the sum of tasks indicated.

Competitiveness

The competitiveness aggregated KPI combines the competitive win rate and chosen as standard root KPIs.

Competitive win rate

What we measure
We measure how well products perform against other products in head-on competitions to win customers.

Why it is important
Recognizing which products to evaluate entails understanding which products have fared well in other organizations' product selections. Eliminating 'losers' at an early stage is important.
The Survey has consistently found that products from some large vendors are often bought with little or no evaluation and therefore appear to have an artificially high win rate compared with products from smaller, independent vendors, who have to fight for every sale.

How we measure
We calculate the win rate for products chosen by organizations that have evaluated at least one other product. We divide the frequency with which the product was chosen by the frequency with which the product was evaluated.

Chosen as standard
Previously referred to as 'on-site competitiveness' or 'prevalence rates in multi-product sites'.

What we measure
This KPI measures how desirable the product is to companies or users who have seen it in use in the workplace.

Why it is important
We regard it as a sign that a product is more important if it is chosen more often among several products available in the organization.

How we measure
We measure how often the product is chosen to standardize on by respondents in multi-product sites.

Recommendation

The recommendation KPI is a single KPI in its own group. This KPI was previously referred to as 'Plans for more licences'.

What we measure
We measure whether customers that already have the product in use would recommend the product.

Why it is important
No one knows more about how a product performs in the real world than the customers already using it. All too often, they find that products don't live up to expectations, or that the vendor does not support the product properly. Therefore if existing users say they would recommend the product, we regard this as a positive indicator of the product's value.

How we measure
Users are asked whether they would recommend the product they are most familiar with. This is the sum of positive responses.

Innovation

New ideas and technologies are the lifeblood of the software industry. However, some vendors prefer to rest on their laurels, relying on existing technologies and lucrative maintenance contracts with loyal customers.
The innovation KPI looks at four technologies – cloud BI, collaboration, mobile BI and visual analysis – to measure a product's level of innovation.
Crucially, we do not investigate whether the vendor has promised the feature; we measure whether innovative features are in use by the vendor's customers.

Cloud BI

What we measure
We measure how many sites actually use BI in a cloud environment for any given product.

Why it is important
Many software categories have adopted cloud computing. However, there have been concerns regarding security. Business Intelligence has been a late adopter of cloud technology.

How we measure
We ask participants whether the tool they are most familiar with is being used in a cloud environment by their company. The KPI is based on the proportion of sites using BI in the cloud.

Collaboration

What we measure
We measure how many sites actually use collaboration features with their BI tool.

Why it is important
Business intelligence tends to be limited to hard numbers, typically financial. Linking analytic technology more closely to processes and human interactions may be an innovative way to allow companies to release potential value.
The capacity to share content and annotations with other users is crucial. This is where the collaborative features of BI tools are important in aiding the exchange of information about key metrics and ultimately facilitating the decision making process.

How we measure
We ask participants whether they use collaboration features with the tool they are most familiar with. The KPI is based on the proportion of sites sharing content and annotations with other users.

Mobile use

Mobile BI has been available for years but has not yet gained much traction in the marketplace. New mobile hardware is making this software increasingly versatile.

What we measure
We measure how many sites are actually using mobile BI for any given product.

Why it is important
The promise of Mobile BI could shift business from the PC to new platforms.

How we measure
We ask participants whether the tool they are most familiar with is being used for mobile business intelligence by their company. The KPI is based on the probability that mobile BI is being used.

Visual analysis

What we measure
We measure how many sites are actually using visual analysis and data discovery for any given product.

Why it is important
Advanced visualization tools such as heat map and scatter plots are increasing in popularity.

How we measure
We ask participants whether the tool they are most familiar with is being used for visual analysis and / or data discovery by their company. The KPI is based on the probability that this is being used.

Performance

Users might be content to work around missing features and bugs. However when it comes to performance, users demand speed. We measure two aspects of performance in this KPI: query performance and performance satisfaction.

Query performance

What we measure

We measure the typical time it takes for queries to respond in the largest application using the tool adjusted for the input data volume.

Why it is important

Fast performance is more important than most people realize. You can work around missing features and even bugs, but nothing can disguise an application that is painfully slow. And few things can put users off from making the most of an application more than irritation at its response times. This is proven by the clear link between project success and query performance throughout the history of The Survey.

There may well be other influencing factors, such as hardware capacity, but we do not have the data to account for such factors. However, it is unlikely that the majority of surveyed customers would under-specify the hardware. And if applications are hard to optimize for best performance, then this is a fair reflection of user experiences with the product.

How we measure

The KPI is calculated by dividing median response time per product by median data volume per product.

Performance satisfaction

Previously referred to as 'Query performance complaints'.

What we measure

We ask how common complaints about the system's performance are.

Why it is important

Performance satisfaction is crucial in business intelligence projects, and often affects project outcomes.

In some ways, complaints about performance are more important than performance measured in seconds, because acceptable delays can vary depending upon how the system is used.

Performance is not only the most frequent product-related problem. Along with data quality it has been the most frequently reported problem in recent years. Beyond that, poor query performance leads to reduced business benefits and goal achievement, so it is more than just a technical problem.

How we measure

We calculate the proportion of users indicating 'query performance too slow' as a problem.

Complaints are a negative factor, so this KPI rises as query performance complaints fall.

Satisfaction

Previously referred to as 'quality and support'.
We combine product satisfaction, vendor support and implementer support to calculate this aggregated KPI.

Product satisfaction, vendor support and implementer support are clearly related: If one is lacking, then the importance of the other is accentuated. This aggregate KPI is therefore based on the aggregate of the product satisfaction, vendor support and implementer support KPIs.

Product satisfaction

Previously referred to as 'product quality'.

What we measure

We measure the frequency of product problems.

Why it is important

If a product proves unreliable at a critical time, the results can be debilitating, and can even render an application unusable.
However, not all customers have the same dependency on reliability, as some applications are not mission critical or time critical.

How we measure

We ask respondents to name the problems they have encountered in their use of the product. Afterwards we count the sum of all product-related problems.
Product problems are a negative factor, so the product satisfaction KPI rises as problem rates fall.

Vendor support

What we measure

We measure user satisfaction with the level of support provided for the product by the vendor.

Why it is important

Product support from the vendor is a key determinant for project success. This is an area where there are major differences between vendor performances.

How we measure

We ask participants to rate the quality of the vendor's support. To calculate the final KPI we calculate an average weighted score per product, in much the same way we calculated the Goal Achievement Index.

Implementer support

What we measure

We measure user satisfaction with the level of support provided for the product by the implementer.

Why it is important

Product support is a key determinant for project success. This is an area where there are major differences between products. The implementer's role can be just as important as the vendor's.

How we measure
We ask participants to rate the support by the implementer. To calculate the final KPI we calculate an average weighted score per product in much the same way we calculated the Goal Achievement Index.

Agility

Agile BI is a style of business intelligence project that promises faster, better results. The BI Survey examined these issues long before the term was invented, and the results confirm that agility leads to more business benefits.
Agility comprises the KPIs project length and self service.

Project length

What we measure
We measure how long it takes to implement projects.

Why it is important
Rapid implementation time is a key measure of project success. Our research over the years has shown that projects with about a three month implementation time deliver the most benefits to the company.

How we measure
We divide the number of projects implemented in under three months by the total number of projects.

Self Service

What we measure
We measure what activities users carry out themselves with the BI product.

Why it is important
Self-service BI speeds up processes and eliminates the middle man. Independence from IT processes is a commonly cited need in BI projects.

How we measure
We asked participants which of a list of activities including report design and data management were carried out by users. The KPI is based on the average number of these activities.

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