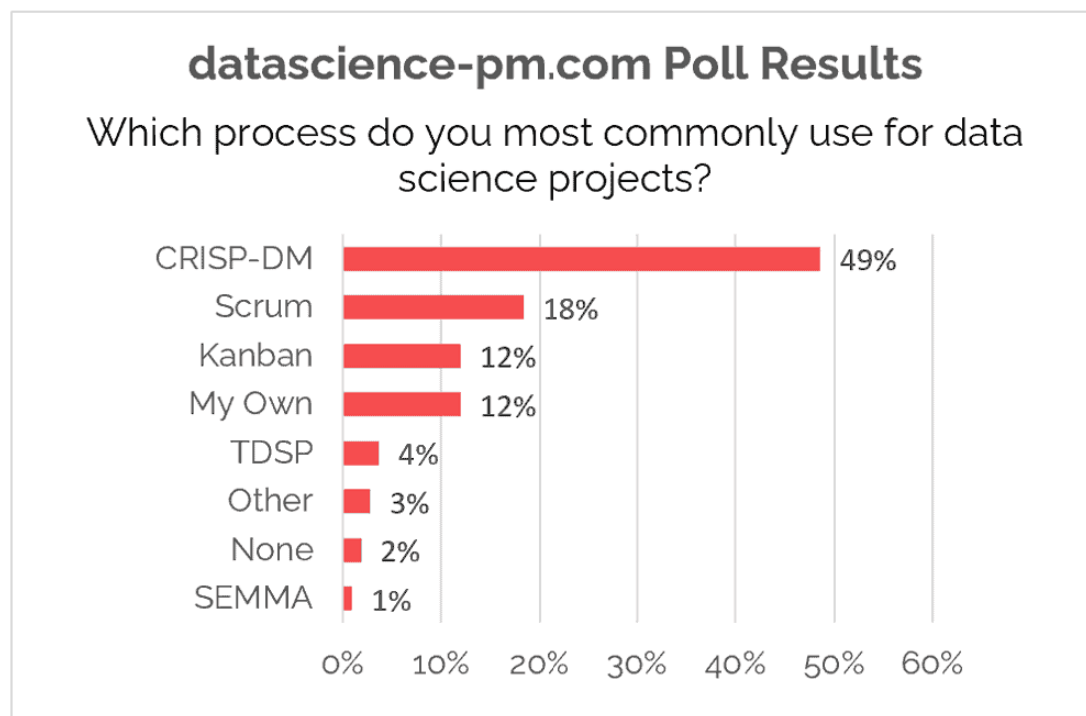


## Business Intelligence: What It Is, How It Works, Its Importance, Examples, & Tools

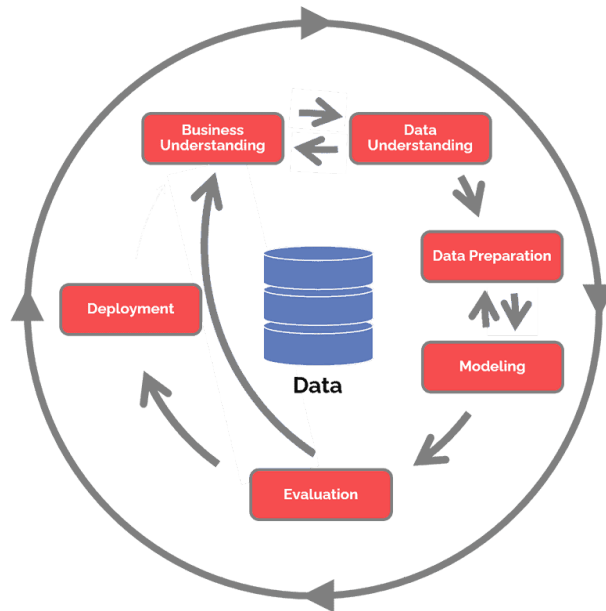
Business intelligence can help companies make better decisions by showing present and historical data within their business context. Analysts can leverage BI to provide performance and competitor benchmarks to make the organization run smoother and more efficiently. Analysts can also more easily spot market trends to increase sales or revenue. Used effectively, the right data can help with anything from compliance to hiring efforts. A few ways that business intelligence can help companies make smarter, data-driven decisions:

- Identify ways to increase profit
- Analyze customer behavior
- Compare data with competitors
- Track performance
- Optimize operations
- Predict success
- Spot market trends
- Discover issues or problems

How does it work? We can refer to the most popular framework for executing Data Science projects : CRISP-DM.



The Cross Industry Standard Process for Data Mining (CRISP-DM) is a process model with six phases that naturally describes the data science life cycle. It's like a set of guardrails to help you plan, organize, and implement your data science (or machine learning) project.



Published in 1999 to standardize data mining processes across industries, it has since become the [most common methodology](#) for data mining, analytics, and data science projects. It has six phases:

1. Business understanding – What does the business need?
2. Data understanding – What data do we have / need? Is it clean?
3. Data preparation – How do we organize the data for modeling?
4. Modeling – What modeling techniques should we apply?
5. Evaluation – Which model best meets the business objectives?
6. Deployment – How do stakeholders access the results?

CRISP-DM framework is also relevant to business intelligence common life cycle, except we should change the **“modeling”** part into **“data visualization”**

What are the **skills needed** for becoming a BI Analyst?

There are many skills that should be in the arsenal of a BI Analyst. Some of these are given below:

#### 1. Data preparation

Data preparation is a very important part of Business Intelligence. To obtain any insights from the data, first, the data needs to be collected, cleaned, and organized in a uniform manner. There are many data preparation tools that can collect data from

various sources and then prepare this data with the same dimensions and measurements. And as a BI Analyst, you should be familiar with at least some of these data preparation tools like Tableau Prep, Improvado, Alteryx, etc.

## 2. Data mining

Data mining is the process of finding patterns in the data that were previously not visible. This converts the raw data into useful information that can be used for decision-making. The knowledge of data mining requires an understanding of various technologies like machine learning, databases, statistical analysis, computer science algorithms, etc. Some of the tools that are very helpful in data mining include the Rapid Miner, Oracle data mining, Konstanz Information Miner, etc.

## 3. Statistical analysis

Knowledge of statistics is a big part of becoming a Business Intelligence Analyst. You should have knowledge of various statistical components like mean, median, range, variance, etc. that can be used to get a more detailed view of the data. And these are just the basics! Other advanced statistical topics like combinatorics, set theory, probability, discrete and continuous and bivariate distributions, random variables, etc. are also important. There are many analytical tools that can help businesses to understand their metrics better in order to create a sound BI strategy. These include SAS, Hadoop, Spark, Hive, Pig, etc.

## 4. Descriptive analysis

Description analysis involves researching the data to understand if there are any missing values, outliers, abnormal or skewed distributions, etc. In essence, it is a part of understanding and getting to know the data before presenting the data to decision-makers in a clean form. There are many tools that can be used for descriptive analytics such as the statistical methods described above or data visualization charts that are used to study the data such as histograms, bar charts, box and whisker plots, etc.

## 5. Data visualization

As a BI analyst, a critical part of your job is not just to obtain the patterns in the data but to visualize the data in such a manner that these patterns are clearly visible. So data visualization skills are a big part of becoming a Business Intelligence Analyst. You should have knowledge about various charts that can be used to visualize the data such as Area Charts, Bar Charts, Heat Maps, TreeMaps, Scatter Plots, Gantt Charts, etc. All these charts allow decision-makers to understand the data in more depth by visualizing it and understanding the slowly changing trends or the places where critical changes suddenly occur.

## 6. Business Knowledge

As a Business Intelligence Analyst, you should have sound business knowledge as well. You should be well acquainted with the business model of the company you are working for and understand how to leverage the data in order to obtain the maximum profit for the business based on the key performance indicators. You should understand both the short term and long term business goals of the company so that you can help in charting the future path with the help of data.

## 7. Data Reporting

Data Report skills or Communication skills are soft skills that are absolutely essential to your job as a business intelligence analyst. You should have the speaking skills to report the insights obtained from the data to higher-ups in the business such as the stakeholders and board members so that they can make the necessary decisions for the business. Also, it is important to remember that most of the decision-makers might be from a technical background so it's important to use layman language to explain technical concepts so that they are easily understandable.

### Source:

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- **KPI A to Z : Panduan Implementasi KPI yang Workable** by Yohanes Abdullah → this is the book recommendation if you want to get deeper business understanding
- **Storytelling with Data** by Cole Nussbaumer Knaflic → this is the book recommendation if you want to know best practice of data visualization