**Power BI Assignment 1**

1. What do you mean by BI? Explain.

## **What is business intelligence?**

**Business intelligence (BI) is a technology-driven process for analyzing data and delivering actionable information that helps executives, managers and workers make informed business decisions. As part of the BI process, organizations collect data from internal IT systems and external sources, prepare it for analysis, run queries against the data and create data visualizations,**[**BI dashboards**](https://www.techtarget.com/searchbusinessanalytics/definition/business-intelligence-dashboard)**and reports to make the analytics results available to business users for operational decision-making and**[**strategic planning**](https://www.techtarget.com/searchcio/definition/strategic-planning)**.**

**The ultimate goal of BI initiatives is to drive better business decisions that enable organizations to increase revenue, improve operational efficiency and gain competitive advantages over business rivals. To achieve that goal, BI incorporates a combination of analytics,**[**data management**](https://www.techtarget.com/searchdatamanagement/definition/data-management)**and reporting tools, plus various methodologies for managing and analyzing data.**

## **How does the business intelligence process work?**

**A**[**business intelligence architecture**](https://www.techtarget.com/searchbusinessanalytics/definition/business-intelligence-architecture)**includes more than just BI software. Business intelligence data is typically stored in a data warehouse built for an entire organization or in smaller**[**data marts**](https://www.techtarget.com/searchdatamanagement/definition/data-mart)**that hold subsets of business information for individual departments and business units, often with ties to an enterprise data warehouse. In addition, data lakes based on Hadoop clusters or other**[**big data**](https://www.techtarget.com/searchdatamanagement/definition/big-data)**systems are increasingly used as repositories or landing pads for BI and analytics data, especially for log files, sensor data, text and other types of unstructured or semistructured data.**

**BI data can include historical information and real-time data gathered from source systems as it's generated, enabling BI tools to support both strategic and tactical**[**decision-making processes**](https://www.techtarget.com/searchbusinessanalytics/definition/decision-making-process)**. Before it's used in BI applications, raw data from different source systems generally must be integrated, consolidated and cleansed using data integration and**[**data quality management**](https://www.techtarget.com/searchdatamanagement/definition/data-quality)**tools to ensure that BI teams and business users are analyzing accurate and consistent information.**

**From there, the steps in the BI process include the following:**

* [**data preparation**](https://www.techtarget.com/searchbusinessanalytics/definition/data-preparation)**, in which data sets are organized and modeled for analysis;**
* **analytical querying of the prepared data;**
* **distribution of key performance indicators (KPIs) and other findings to business users; and**
* **use of the information to help influence and drive business decisions.**

**Initially, BI tools were primarily used by BI and IT professionals who ran queries and produced dashboards and reports for business users. Increasingly, however, business analysts, executives and workers are using business intelligence platforms themselves, thanks to the development of**[**self-service BI**](https://www.techtarget.com/searchbusinessanalytics/definition/self-service-business-intelligence-BI)**and data discovery tools. Self-service business intelligence environments enable business users to query BI data, create**[**data visualizations**](https://www.techtarget.com/searchbusinessanalytics/definition/data-visualization)**and design dashboards on their own.**

**BI programs often incorporate forms of advanced analytics, such as data mining,**[**predictive analytics**](https://www.techtarget.com/searchbusinessanalytics/definition/predictive-analytics)**, text mining, statistical analysis and**[**big data analytics**](https://www.techtarget.com/searchbusinessanalytics/definition/big-data-analytics)**. A common example is predictive modeling that enables what-if analysis of different business scenarios. In most cases, though, advanced analytics projects are conducted by separate teams of**[**data scientists**](https://www.techtarget.com/searchenterpriseai/definition/data-scientist)**, statisticians, predictive modelers and other skilled analytics professionals, while BI teams oversee more straightforward querying and analysis of business data.**

## **Benefits of business intelligence**

**A successful BI program produces a variety of business benefits in an organization. For example, BI enables C-suite executives and department managers to monitor business performance on an ongoing basis so they can act quickly when issues or opportunities arise.**[**Analyzing customer data**](https://www.techtarget.com/searchbusinessanalytics/definition/customer-analytics)**helps make marketing, sales and customer service efforts more effective. Supply chain, manufacturing and distribution bottlenecks can be detected before they cause financial harm. HR managers are better able to monitor employee productivity, labor costs and other workforce data.**

**Overall, the key benefits that businesses can get from BI applications include the ability to:**

* **speed up and improve decision-making;**
* **optimize internal business processes;**
* **increase operational efficiency and productivity;**
* **spot business problems that need to be addressed;**
* **identify emerging business and market trends;**
* **develop stronger business strategies;**
* **drive higher sales and new revenues; and**
* **gain a competitive edge over rival companies.**

**BI initiatives also provide narrower business benefits -- among them, making it easier for project managers to track the status of business projects and for organizations to gather competitive intelligence on their rivals. In addition, BI, data management and IT teams themselves benefit from business intelligence, using it to analyze various aspects of technology and analytics operations.**

## **Types of business intelligence tools and applications**

**Business intelligence combines a broad set of data analysis applications designed to meet different information needs. Most are supported by both self-service BI software and traditional BI platforms. The list of BI technologies that are available to organizations includes the following:**

[**Ad hoc analysis**](https://www.techtarget.com/searchbusinessanalytics/definition/ad-hoc-analysis)**. Also known as ad hoc querying, this is one of the foundational elements of modern BI applications and a key feature of self-service BI tools. It's the process of writing and running queries to analyze specific business issues. While ad hoc queries are typically created on the fly, they often end up being run regularly, with the analytics results incorporated into dashboards and reports.**

[**Online analytical processing**](https://www.techtarget.com/searchdatamanagement/definition/OLAP)**(OLAP). One of the early BI technologies, OLAP tools enable users to analyze data along multiple dimensions, which is particularly suited to complex queries and calculations. In the past, the data had to be extracted from a data warehouse and stored in multidimensional OLAP cubes, but it's increasingly possible to run OLAP analyses directly against columnar databases.**

**Mobile BI. Mobile business intelligence makes BI applications and dashboards available on smartphones and tablets. Often used more to view data than to analyze it, mobile BI tools typically are designed with an emphasis on ease of use. For example, mobile dashboards may only display two or three data visualizations and KPIs so they can easily be viewed on a device's screen.**

[**Real-time BI**](https://www.techtarget.com/searchbusinessanalytics/definition/real-time-business-intelligence-BI)**. In real-time BI applications, data is analyzed as it's created, collected and processed to give users an up-to-date view of business operations, customer behavior, financial markets and other areas of interest. The**[**real-time analytics**](https://www.techtarget.com/searchcustomerexperience/definition/real-time-analytics)**process often involves streaming data and supports decision analytics uses, such as credit scoring, stock trading and targeted promotional offers.**

[**Operational intelligence**](https://www.techtarget.com/searchbusinessanalytics/definition/operational-business-intelligence)**(OI). Also called operational BI, this is a form of real-time analytics that delivers information to managers and frontline workers in business operations. OI applications are designed to aid in operational decision-making and enable faster action on issues -- for example, helping call center agents to resolve problems for customers and logistics managers to ease distribution bottlenecks.**

**Software-as-a-service BI. SaaS BI tools use cloud computing systems hosted by vendors to deliver data analysis capabilities to users in the form of a service that's typically priced on a subscription basis. Also known as cloud BI, the SaaS option increasingly offers multi-cloud support, which enables organizations to deploy BI applications on different cloud platforms to meet user needs and avoid vendor lock-in.**

**Open source BI (OSBI). Business intelligence software that is open source typically includes two versions: a community edition that can be used free of charge and a subscription-based commercial release with technical support by the vendor. BI teams can also access the source code for development uses. In addition, some vendors of proprietary BI tools offer free editions, primarily for individual users.**

**Embedded BI. Embedded business intelligence tools put BI and data visualization functionality directly into business applications. That enables business users to analyze data within the applications they use to do their job. Embedded analytics features are most commonly incorporated by application software vendors, but corporate software developers can also include them in homegrown applications.**

**Collaborative BI. This is more of a process than a specific technology. It involves the combination of BI applications and collaboration tools to enable different users to work together on data analysis and share information with one another. For example, users can annotate BI data and analytics results with comments, questions and highlighting via the use of online chat and discussion tools.**

**Location intelligence (LI). This is a specialized form of BI that enables users to analyze location and geospatial data, with map-based data visualization functionality incorporated. Location intelligence offers insights on geographic elements in business data and operations. Potential uses include site selection for retail stores and corporate facilities, location-based marketing and logistics management.**

## **Business intelligence vendors and market**

**Self-service BI and data visualization tools have become the standard for modern BI software. Tableau, Qlik and Spotfire, which is now part of Tibco Software, took the lead in developing self-service technology early and became prominent competitors in the BI market by 2010. Most vendors of traditional BI query and reporting tools have followed in their path since then. Now, virtually every major BI tool incorporates self-service features, such as visual data discovery and ad hoc querying.**

**In addition, modern BI platforms typically include:**

* **data visualization software for designing charts and other infographics to show data in an easy-to-grasp way;**
* **tools for building BI dashboards, reports and performance scorecards that display visualized data on KPIs and other business metrics;**
* **data storytelling features for combining visualizations and text in presentations for business users; and**
* **usage monitoring, performance optimization, security controls and other functions for managing BI deployments.**

**BI tools are available from dozens of vendors overall. Major IT vendors that offer BI software include IBM, Microsoft, Oracle, SAP, SAS and Salesforce, which bought Tableau in 2019 and also sells its own tools developed before the acquisition. Google is also in the BI market through its Looker unit, acquired in 2020. Other notable BI vendors include Alteryx, Domo, GoodData, Infor Birst, Information Builders, Logi Analytics, MicroStrategy, Pyramid Analytics, Sisense, ThoughtSpot and Yellowfin.**

**While full-featured BI platforms are the most widely used business intelligence technology, the BI market also includes other product categories. Some vendors offer tools specifically for embedded BI uses; examples include GoodData and Logi Analytics. Companies like Looker, Sisense and ThoughtSpot target complex and curated data analysis applications. Various dashboard and data visualization specialists focus on those parts of the BI process; other vendors specialize in data storytelling tools.**

## **What are some examples of business intelligence use cases?**

**In general terms, enterprise BI use cases include:**

* **monitoring business performance or other types of metrics;**
* **supporting decision-making and strategic planning;**
* **evaluating and improving business processes;**
* **giving operational workers useful information about customers, equipment, supply chains and other elements of business operations; and**
* **detecting trends, patterns and relationships in data.**

**Specific use cases and BI applications vary from industry to industry. For example, financial services firms and insurers use BI for**[**risk analysis**](https://www.techtarget.com/searchsecurity/definition/risk-analysis)**during the loan and policy approval processes and to identify additional products to offer to existing customers based on their current portfolios. BI helps retailers with marketing campaign management, promotional planning and inventory management, while manufacturers rely on BI for both historical and real-time analysis of plant operations and to help them manage production planning, procurement and distribution.**

**Airlines and hotel chains are big users of BI for things such as tracking flight capacity and room occupancy rates, setting and adjusting prices, and scheduling workers. In healthcare organizations, BI and analytics aid in the diagnosis of diseases and other medical conditions and in efforts to improve patient care and outcomes. Universities and school systems tap BI to monitor overall student performance metrics and identify individuals who might need assistance, among other applications.**

## **Business intelligence for big data**

**BI platforms are increasingly being used as front-end interfaces for big data systems that contain a combination of structured, unstructured and semistructured data. Modern BI software typically offers flexible connectivity options, enabling it to connect to a range of data sources. This, along with the relatively simple user interface (**[**UI**](https://www.techtarget.com/searchapparchitecture/definition/user-interface-UI)**) in most BI tools, makes it a good fit for big data architectures.**

**Users of BI tools can access Hadoop and Spark systems,**[**NoSQL databases**](https://www.techtarget.com/searchdatamanagement/definition/NoSQL-Not-Only-SQL)**and other big data platforms, in addition to conventional data warehouses, and get a unified view of the diverse data stored in them. That enables a broad number of potential users to get involved in analyzing sets of big data, instead of highly skilled data scientists being the only ones with visibility into the data.**

**Alternatively, big data systems serve as staging areas for raw data that later is filtered and refined and then loaded into a data warehouse for analysis by BI users.**

## **Business intelligence trends**

**In addition to BI managers, business intelligence teams generally include a mix of BI architects, BI developers, BI analysts and BI specialists who work closely with data architects, data engineers and other data management professionals. Business analysts and other end users are also often included in the BI development process to represent the business side and make sure its needs are met.**

**To help with that, a growing number of organizations are replacing traditional waterfall development with Agile BI and data warehousing approaches that use**[**Agile software development**](https://www.techtarget.com/searchsoftwarequality/definition/agile-software-development)**techniques to break up BI projects into small chunks and deliver new functionality on an incremental and iterative basis. Doing so enables companies to put BI features into use more quickly and to refine or modify development plans as business needs change or new requirements emerge.**

**Other notable trends in the BI market include the following:**

* **The proliferation of augmented analytics technologies. BI tools increasingly offer natural language querying capabilities as an alternative to writing queries in SQL or another programming language, plus AI and**[**machine learning**](https://www.techtarget.com/searchenterpriseai/definition/machine-learning-ML)**algorithms that help users find, understand and prepare data and create charts and other infographics.**
* **Low-code and no-code development. Many BI vendors are also adding graphical tools that enable BI applications to be developed with little or no coding.**
* **Increased use of the cloud. BI systems initially were slow to move to the cloud, partly because data warehouses were primarily deployed in on-premises data centers. But cloud deployments of both data warehouses and BI tools are growing; in early 2020, consulting firm Gartner said most new BI spending is now for cloud-based projects.**
* **Efforts to improve data literacy. With self-service BI broadening the use of business intelligence tools in organizations, it's critical to ensure that new users can understand and work with data. That's prompting BI teams to include data literacy skills in user training programs. BI vendors have also launched initiatives, such as the Qlik-led Data Literacy Project.**

## **Business intelligence vs. data analytics and business analytics**

**Sporadic use of the term business intelligence dates back to at least the 1860s, but consultant Howard Dresner is credited with first proposing it in 1989 as an umbrella phrase for applying data analysis techniques to support business decision-making processes. What came to be known as BI tools evolved from earlier, often mainframe-based analytics technologies, such as decision support systems and executive information systems that were primarily used by business executives.**

**Business intelligence is sometimes used interchangeably with**[**business analytics**](https://www.techtarget.com/searchbusinessanalytics/definition/business-analytics-BA)**. In other cases, business analytics is used either more narrowly to refer to advanced analytics or more broadly to include both that and BI. Meanwhile,**[**data analytics**](https://www.techtarget.com/searchdatamanagement/definition/data-analytics)**is primarily an umbrella term that encompasses all forms of BI and analytics applications. That includes the main types of data analysis: descriptive analytics, which is typically what BI provides; predictive analytics, which models future behavior and outcomes; and prescriptive analytics, which recommends business actions.**

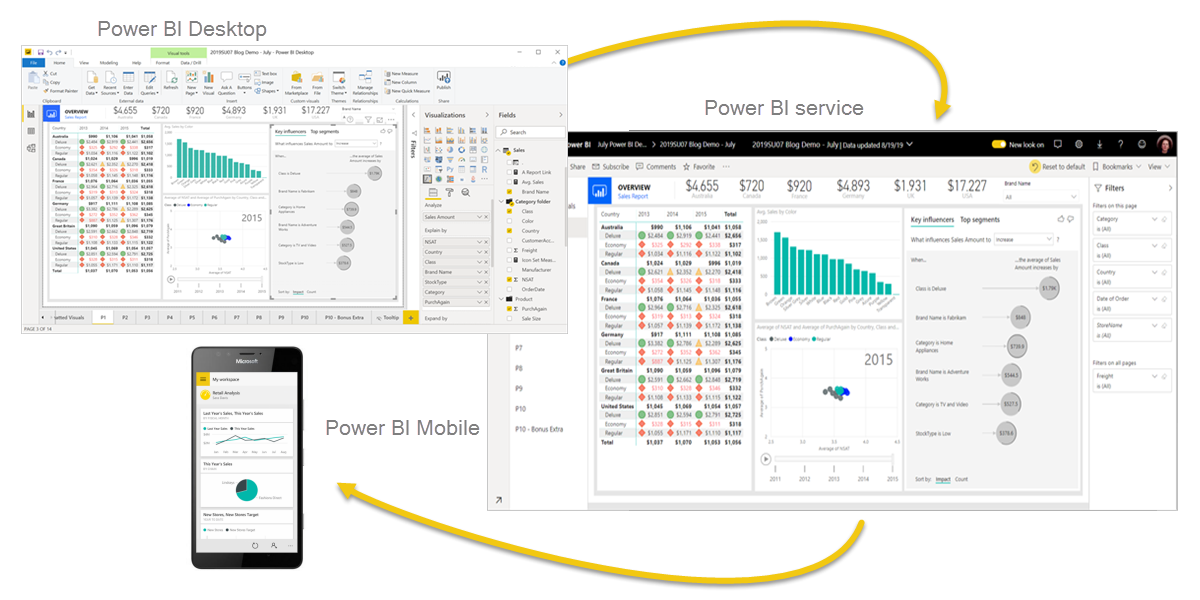
1. How Power-BI helps in BI, and how does it help Analysts? Explain.

**Power BI is a collection of software services, apps, and connectors that work together to turn your unrelated sources of data into coherent, visually immersive, and interactive insights. Your data might be an Excel spreadsheet, or a collection of cloud-based and on-premises hybrid data warehouses. Power BI lets you easily connect to your data sources, visualize and discover what's important, and share that with anyone or everyone you want.**

## **The parts of Power BI**

**Power BI consists of several elements that all work together, starting with these three basics:**

* **A Windows desktop application called Power BI Desktop.**
* **An online software as a service (SaaS) service called the Power BI service.**
* **Power BI Mobile apps for Windows, iOS, and Android devices.**

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**These three elements—Power BI Desktop, the service, and the mobile apps—are designed to let you create, share, and consume business insights in the way that serves you and your role most effectively.**

**Beyond those three, Power BI also features two other elements:**

* **Power BI Report Builder, for creating paginated reports to share in the Power BI service. Read more about**[**paginated reports**](https://learn.microsoft.com/en-us/power-bi/fundamentals/power-bi-overview#paginated-reports-in-the-power-bi-service)**later in this article.**
* **Power BI Report Server, an on-premises report server where you can publish your Power BI reports, after creating them in Power BI Desktop. Read more about**[**Power BI Report Server**](https://learn.microsoft.com/en-us/power-bi/fundamentals/power-bi-overview#on-premises-reporting-with-power-bi-report-server)**later in this article.**

## **How Power BI matches your role**

**How you use Power BI depends on your role in a project or on a team. Other people, in other roles, might use Power BI differently.**

**For example, you might primarily use the Power BI service to view reports and dashboards. Your number-crunching, business-report-creating coworker might make extensive use of Power BI Desktop or Power BI Report Builder to create reports, then publish those reports to the Power BI service, where you view them. Another coworker, in sales, might mainly use the Power BI Mobile app to monitor progress on sales quotas, and to drill into new sales lead details.**

**If you're a developer, you might use Power BI APIs to push data into semantic models or to embed dashboards and reports into your own custom applications. Have an idea for a new visual? Build it yourself and share it with others.**

**You also might use each element of Power BI at different times, depending on what you're trying to achieve or your role for a given project.**

**How you use Power BI can be based on which feature or service of Power BI is the best tool for your situation. For example, you can use Power BI Desktop to create reports for your own team about customer engagement statistics and you can view inventory and manufacturing progress in a real-time dashboard in the Power BI service. You can create a paginated report of mailable invoices, based on a Power BI semantic model. Each part of Power BI is available to you, which is why it's so flexible and compelling.**

**Explore documents that pertain to your role:**

* **Power BI for**[**business users**](https://learn.microsoft.com/en-us/power-bi/consumer/end-user-consumer)
* **Power BI Desktop for**[**report creators**](https://learn.microsoft.com/en-us/power-bi/fundamentals/desktop-what-is-desktop)
* **Power BI Report Builder for**[**enterprise report creators**](https://learn.microsoft.com/en-us/power-bi/paginated-reports/paginated-reports-report-builder-power-bi)
* **Power BI for**[**administrators**](https://learn.microsoft.com/en-us/fabric/admin/microsoft-fabric-admin)
* **Power BI for developers**
  + [**What is Power BI embedded analytics?**](https://learn.microsoft.com/en-us/power-bi/developer/embedded/embedded-analytics-power-bi)
  + [**Create your own visuals in Power BI**](https://learn.microsoft.com/en-us/power-bi/developer/visuals/develop-power-bi-visuals)
  + [**What can developers do with the Power BI API?**](https://learn.microsoft.com/en-us/rest/api/power-bi/)

## **The flow of work in Power BI**

**One common workflow in Power BI begins by connecting to data sources in Power BI Desktop and building a report. You then publish that report from Power BI Desktop to the Power BI service, and share it so business users in the Power BI service and on mobile devices can view and interact with the report.**

**This workflow is common, and shows how the three main Power BI elements complement one another.**

### **Use the deployment pipeline tool**

**In the Power BI service, you can use the**[**deployment pipeline tool**](https://learn.microsoft.com/en-us/fabric/cicd/deployment-pipelines/intro-to-deployment-pipelines)**to test your content before you release it to your users. The deployment pipeline tool can help you deploy reports, dashboards, semantic models, and paginated reports. Read about how to**[**get started with deployment pipelines**](https://learn.microsoft.com/en-us/fabric/cicd/deployment-pipelines/get-started-with-deployment-pipelines)**in the Power BI service.**

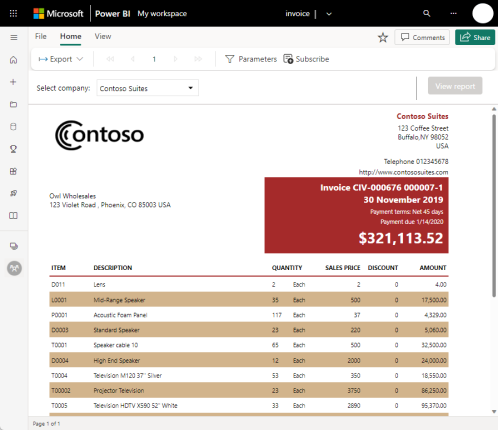
## **How Microsoft Fabric works with Power BI**

[**Microsoft Fabric**](https://learn.microsoft.com/en-us/fabric/get-started/microsoft-fabric-overview)**is an offering that combines data + services in a unified environment, making it easier to perform analysis and analytics on various sets of data. Power BI is an example of one of the services that's integrated with Microsoft Fabric, and your organization's OneLake data store is an example of the data that can be used, analyzed, or visualized. Large organizations find Microsoft Fabric particularly useful, since it can corral and then bring greater value to large stores of data, then using services (like Power BI) to bring such data to business life.**

**Administration of Power BI is now handled by Microsoft Fabric, but your favorite tools like the Power BI service and Power BI Desktop still operate like they always have - as a service that can turn your data, whether in OneLake or in Excel, into powerful business intelligence insights.**

## **Paginated reports in the Power BI service**

**Another workflow involves paginated reports in the Power BI service. Enterprise report creators design paginated reports to be printed or shared. They can also share these reports in the Power BI service. They're called paginated because they're formatted to fit well on a page. They're often used for operational reports, or for printing forms such as invoices or transcripts. They display all the data in a table, even if the table spans multiple pages. Power BI Report Builder is the standalone tool for authoring paginated reports.**

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**Read more about**[**paginated reports**](https://learn.microsoft.com/en-us/power-bi/paginated-reports/paginated-reports-report-builder-power-bi)**in the Power BI service.**

## **On-premises reporting with Power BI Report Server**

**What if you need to keep your reports on premises, say, behind a firewall? Read on.**

**You can create, deploy, and manage Power BI reports in Power BI Desktop, and paginated reports in Report Builder, with the ready-to-use tools and services that Power BI Report Server provides.**

**Power BI Report Server is a solution that you deploy behind your firewall and then deliver your reports to the right users in different ways, whether that's viewing them in a web browser, on a mobile device, or as an email. And because Power BI Report Server is compatible with Power BI in the cloud, you can move to the cloud when you're ready.**

1. Explain Descriptive analytics?

# **What is Descriptive Analytics?**

**Descriptive analytics** is a statistical interpretation used to analyze historical data to identify patterns and relationships. Descriptive analytics seeks to describe an event, phenomenon, or outcome. It helps understand what has happened in the past and provides businesses the perfect base to track trends.

Descriptive analytics is about finding meaning within data. Data needs context: analytics provide the where and when turning figures into measurable patterns

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As a form of data analysis, descriptive analytics is one of the four key types of [data analytics](https://www.jaspersoft.com/articles/what-is-data-analytics). The others are diagnostic analysis, predictive analysis, and prescriptive analytics.

## **How the Four Types of Analytics Work Together**

In a general sense, analytics is about discovering patterns in data and communicating these trends to various stakeholders. When working with rich recorded data, analytics use statistics, programming, and operation research to validate data performance. There are four basic types of analytics – descriptive, diagnostic, predictive, and prescriptive.

Organizations often combine descriptive analytics and other forms to arrive at a bigger picture of the company's performance. Descriptive analytics summarizes and interprets historical data, while other analytical papers examine the causes behind trends and future outcomes. Besides the analysis humans drive, the process likely utilizes machine learning to spot patterns and connections in data automatically.

Diagnostic analytics examines why things happened the way they did, diagnosing a problem or root cause. It seeks to identify causes of trends and anomalies that descriptive analytics may have previously spotted. Diagnostic analytics can do this with data mining and correlation, among other methods.

As the name suggests, [predictive analytics](https://www.jaspersoft.com/articles/what-is-predictive-analytics) uses historical data to make predictions. It provides forecasts on probability and possible effects of particular future outcomes. This enables the management of organizations to work with a proactive, data-backed approach to their decision-making. A company can also utilize predictive analytics to understand the possible impact of problems.

And finally, [prescriptive analytics](https://www.jaspersoft.com/articles/what-is-prescriptive-analytics) makes use of results from descriptive, diagnostic, and predictive analytics to arrive at suggestions for businesses to ensure good potential outcomes.

## **What Information Do Descriptive Analytics Provide?**

Descriptive analytics can be applied to a wide variety of everyday operational activities of a business. Reports on inventory, various workflows, sales figures, and revenue statistics are all based on descriptive analytics. Together, these reports offer a company a historical overview of its operations. The data within such statements can be collected to serve as a base to create specific snapshots of various business-related functions.

Social analytics is an example of descriptive analytics to create such snapshots. For every post put up on social media, analysis can be drawn on the page's followers, the likes a post gets, the interactive comments, the number of page views, and the available response time. All of these factors ascertain the impact of the page on its target audience and, when aggregated, will focus on any gaps or areas for improvement. It helps with a better understanding of consumer attitudes.

However, it must be understood that descriptive analytics only determines patterns and does not venture beyond surface data analysis. They do not make inferences or create predictions. While the annual revenue sales report may show that a business has been profitable this year, management will need other methodologies to compare it with previous years' accounts to understand whether this profit has been higher or lower than in earlier years. Such comparisons will help organizations arrive at a trend.

## **How Do Descriptive Analytics Work?**

For descriptive analytics to work, the organization first needs to create a set of metrics that will measure business performance against business goals. For example, a manufacturing business may have year-on-year raw materials price changes or monthly revenue growth metrics. A technology company may examine how many subscribers they have added each month or how many upgrades to their technology they have created. With the necessary metrics in place, relevant data must be collected. It will then have to be managed, cleansed, and prepped for the next step, which is data analytics.

The historical data collection for descriptive analytics is done using two main techniques – data aggregation and data mining. A company collects and organizes data into manageable data sets with data aggregation. The data collected is analyzed with various tools and methods like summary statistics or pattern tracking. Analysts use these to study data and uncover patterns and, in turn, performance.

Examples of how companies might use descriptive analytics:

* Some outcomes of descriptive analytics include creating a wide range of reports related to sales, revenue, and workflow, including inventory reports
* Insights into the use of social media and engagement within it from various platforms and based on multiple metrics
* Summary of events that have concluded like marketing campaigns, [operational data](https://www.jaspersoft.com/articles/what-is-operational-reporting), sales-related measurables
* Collation of survey results
* Reportage on general trends
* This form of analysis is precious in assessing data from learners to create better outcomes from training programs.

For example, when a multi-country board of directors digital meets, descriptive analytics can ascertain how many members were active participants in the discussion, the interaction levels, and how many were posted on the discussion forum. Another example would be reporting financial metrics such as a year-on-year change in pricing, monthly sales growth (or decline) figures, and revenue from subscribers. This data is based on what has occurred within a fixed business period.

## **How to Apply Descriptive Analytics to an Organization**

Understanding the basics of descriptive analytics seems simple enough, but applying it in real life can be challenging. There are several steps that an organization needs to follow to apply descriptive analytics to their business.

### **Identify Relevant Metrics**

First, the organization needs to know the metrics to be created. These metrics should reflect primary business goals for each sector of the company or from the organization. Management may want to look at growth from a quarterly perspective or may need to track outstanding payments to understand delays. Identifying various data metrics is the first step.

If this step is not completed with some consideration, the outcomes will not be helpful. An organization needs to understand what is measurable, how to collect the appropriate data, and if it is applicable.

An example is in the marketing and sales department; sales representatives will track revenue from sales per month. An accountant will want to examine financial metrics like gross profit margin.

### **Identify Data to Support These Metrics**

The next step is to find the data needed to support the required metrics. The data can be found across several siloes and files for some organizations. Most of the data required may already be within the company if an organization already functions with enterprise resource planning (ERP) systems. Identify any external sources required, particularly those related to industry benchmarks, non-company databases, e-commerce sites, and the many social media sites.

### **Data Extraction and Preparation**

If an organization is working across multiple data sources, it will need to extract data, merge it, and prepare it for analysis to ensure uniformity. This is a drawn-out process but is critical for accuracy. Data cleansing is a part of removing redundancies and mistakes and creating data in a format suitable for analysis.

### **Data Analysis**

There are several tools available to provide descriptive analytics. These can range from basic spreadsheets to a wide range of more complex [business intelligence (BI)](https://www.jaspersoft.com/articles/what-is-business-intelligence) software. These can be cloud-based, on-site. These programs use various algorithms to create accurate summaries and insights into the provided data.

### **Data Presentation**

The final aspect of descriptive analytics is presenting the data. This is usually done using visualization techniques, with compelling and exciting forms of presentation to make the data accessible for the user to understand. Options such as bar charts, pie charts, and line graphs present information. While such a visually appealing presentation is how some departments prefer their knowledge, financial professionals may opt for data in tables and numbers. The end-user should be accommodated.

## **Benefits of Descriptive Analytics**

There are several benefits of descriptive analytics.

### **Simple Analysis**

Descriptive analysis doesn't require great expertise or experience in statistical methods or analytics.

### **Many Tools Available**

Many apps make this function a plug-and-play form of analysis.

### **It Answers Most Common Business Performance Questions**

Most stakeholders and salespeople want simple answers to basic questions such as "How are we doing?" or "Why did sales drop?" Descriptive analytics provides the data to effectively and efficiently answer those questions.

## **Challenges to Descriptive Analytics**

Like any other tool, descriptive analysis is not without problems. There are three significant challenges for organizations wanting to use descriptive analytics.

### **It Is a Blunt Tool without Insight**

The descriptive analysis examines the relationship between a handful of variables, and that is all. It simply describes what is happening. Organizations must ensure that users understand what descriptive analytics will provide.

### **It Tells an Organization What, Not Why**

Descriptive analysis reports events as they happened, not why they happened or what could happen next. The organization will need to run the full analytics suite entirely to grasp a situation.

### **Can Measure the Wrong Thing**

If the incorrect metrics are used, the analysis is useless. Organizations must analyze what they want to measure and why. Thought must be put into this process and matched with the outcomes that current data can provide.

### **Poor Data Quality**

While vast amounts of data can be collected, it will not produce accurate results if it is not helpful or full of errors. After an organization decides on the metrics it requires, the data must be checked to ensure it can provide this information. Once it is ascertained that it will provide the relevant information, the data must be thoroughly cleansed. Erroneous data, duplicates, and missing data fields must be resolved.

## **Descriptive Analytics in Future Data Analysis**

Businesses are increasingly becoming data-driven, using results derived from descriptive analytics for optimization or business practices, from sales and financials to improving supply chains. In the future, the prediction is that data analytics will break away from predictive analytics and move towards prescriptive analytics.

The ideal use of data analytics describes what has happened and accurately predicts what is to come. Take the example of a GPS navigational system. Descriptive analytics assess previous delivery routes, the times taken, and fuel use. However, it makes no predictions about the fastest course in the future, ways to improve speed, or how to reduce fuel use.

For that, organizations need to use predictive analytics. Going a step further than simple descriptive analytics, an organization will be provided with optimal delivery directions. Using prescriptive analytics can help compare multiple travel routes and suggest the best one possible for that driver, road, or time of day.

Descriptive analytics is a fundamental technique businesses use to comprehend meaning in the massive amounts of historical data they collect. It is a technique that helps monitor trends and performance while tracking key performance indicators and any other metrics you have narrowed down. However, it is a simple tool and should be viewed as a step in the process, not the ultimate goal. To reach the best outcomes, organizations must use descriptive analytics alongside a predictive, diagnostic, and prescriptive analysis to attain more profound insights, accurate predictions, and how they can improve outcomes.

1. Explain Predictive analytics?

# **Predictive Analytics: Definition, Model Types, and Uses**

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## What Is Predictive Analytics?

Predictive analytics is the use of statistics and modeling techniques to forecast future outcomes. Current and historical data patterns are examined and plotted to determine the likelihood that those patterns will repeat.

Businesses use predictive analytics to fine-tune their operations and decide whether new products are worth the investment. Investors use predictive analytics to decide where to put their money. Internet retailers use predictive analytics to fine-tune purchase recommendations to their users and increase sales.

### **KEY TAKEAWAYS**

* Industries from insurance to marketing use predictive techniques to make important decisions.
* Predictive models help make weather forecasts, develop video games, translate voice-to-text messages, make customer service decisions, and develop investment portfolios.
* Predictive analytics determines a likely outcome based on an examination of current and historical data.
* Decision trees, regression, and neural networks all are types of predictive models.
* People often confuse predictive analytics with machine learning even though the two are different disciplines.

## Understanding Predictive Analytics

Predictive analytics looks for past patterns to measure the likelihood that those patterns will reoccur. It draws on a series of techniques to make these determinations, including [artificial intelligence](https://www.investopedia.com/alternative-investments-4427781) (AI), [data mining](https://www.investopedia.com/terms/d/datamining.asp), machine learning, modeling, and statistics.1 For instance, data mining involves the analysis of large sets of data to detect patterns from it. Text analysis does the same using large blocks of text.

[Predictive models](https://www.investopedia.com/terms/p/predictive-modeling.asp) are used for many applications, including weather forecasts, creating video games, translating voice to text, customer service, and investment portfolio strategies. All of these applications use descriptive statistical models of existing data to make predictions about future data.

Predictive analytics helps businesses manage inventory, develop [marketing strategies](https://www.investopedia.com/terms/m/marketing-strategy.asp), and forecast [sales](https://www.investopedia.com/terms/s/sale.asp).2 It also helps businesses survive, especially in highly competitive [industries](https://www.investopedia.com/terms/i/industry.asp) such as health care and retail.3 Investors and financial professionals draw on this technology to help craft investment [portfolios](https://www.investopedia.com/terms/p/portfolio.asp) and reduce their overall risk potential.4

These models determine relationships, patterns, and structures in data that are used to draw conclusions as to how changes in the underlying processes that generate the data will change the results. Predictive models build on these descriptive models and look at past data to determine the likelihood of certain future outcomes, given current conditions or a set of expected future conditions.

## Uses of Predictive Analytics

Predictive analytics is a decision-making tool in many industries. Following are some examples.

### **Manufacturing**

Forecasting is essential in manufacturing to optimize the use of resources in a [supply chain](https://www.investopedia.com/terms/s/supplychain.asp). Critical spokes of the supply chain wheel, whether it is inventory management or the shop floor, require accurate forecasts for functioning.

Predictive modeling is often used to clean and optimize the quality of data used for such forecasts. Modeling ensures that more data can be ingested by the system, including from customer-facing operations, to ensure a more accurate forecast.

### **Credit**

[Credit scoring](https://www.investopedia.com/terms/c/credit_scoring.asp) makes extensive use of predictive analytics. When a consumer or business applies for credit, data on the applicant's credit history and the credit record of borrowers with similar characteristics are used to predict the risk that the applicant might fail to repay any new credit that is approved.

### **Underwriting**

Data and predictive analytics play an important role in underwriting. Insurance companies examine applications for new policies to determine the likelihood of having to pay out for a future [claim](https://www.investopedia.com/terms/i/insurance_claim.asp). The analysis is based on the current risk pool of similar policyholders as well as past events that have resulted in payouts.

Predictive models that consider characteristics in comparison to data about past policyholders and claims are routinely used by [actuaries](https://www.investopedia.com/terms/a/actuarial-science.asp).

### **Marketing**

Marketing professionals planning a new campagn look at how consumers have reacted to the overall economy. They can use these shifts in demographics to determine if the current mix of products will entice consumers to make a purchase.

### **Stock Traders**

Active traders look at a variety of historical metrics when deciding whether to buy a particular stock or other asset.

Moving averages, bands, and [breakpoints](https://www.investopedia.com/terms/b/breakpoint.asp) all are based on historical data and are used to forecast future price movements.

### **Fraud Detection**

Financial services use predictive analytics to examine transactions for irregular trends and patterns. The irregularities pinpointed can then be examined as potential signs of fraudulent activity.

This may be done by analyzing activity between bank accounts or analyzing when certain transactions occur.

### **Supply Chain**

Supply chain analytics is used to manage inventory levels and set pricing strategies. Supply chain predictive analytics use historical data and statistical models to forecast future supply chain performance, demand, and potential disruptions.

This helps businesses proactively identify and address risks, optimize resources and processes, and improve decision-making. Companies can forecast what materials should be on hand at any given moment and whether there will be any shortages.

### **Human Resources**

Human resources uses predictive analytics to improve various processes such as identifying future workforce skill requirements or identifying factors that contribute to high staff turnover.

Predictive analytics can also analyze an employee's performance, skills, and preferences to predict their career progression and help with career development.

## Predictive Analytics vs. Machine Learning

A common misconception is that predictive analytics and [machine learning](https://www.investopedia.com/terms/m/machine-learning.asp) are the same. Predictive analytics help us understand possible future occurrences by analyzing the past. At its core, predictive analytics includes a series of statistical techniques (including machine learning, predictive modeling, and data mining) and uses statistics (both historical and current) to estimate, or predict, future outcomes.

Thus, machine learning is a tool used in predictive analysis.

Machine learning is a subfield of computer science that means "the programming of a digital computer to behave in a way which, if done by human beings or animals, would be described as involving the process of learning." That's a 1959 definition by Arthur Samuel, a pioneer in computer gaming and artificial intelligence.5

*The most common predictive models include decision trees, regressions (linear and logistic), and neural networks, which is the emerging field of deep learning methods and technologies.*

## Types of Predictive Analytical Models

There are three common techniques used in predictive analytics: Decision trees, neural networks, and regression.

### **Decision Trees**

If you want to understand what leads to someone's decisions, you may find it useful to [build a decision tree](https://www.investopedia.com/articles/financial-theory/11/decisions-trees-finance.asp).

This type of model places data into different sections based on certain variables, such as price or [market capitalization](https://www.investopedia.com/terms/m/marketcapitalization.asp). Just as the name implies, it looks like a tree with individual branches and leaves. Branches indicate the choices available while individual leaves represent a particular decision.

Decision trees are easy to understand and dissect. They're useful when you need to make a decision quickly.6

### **Regression**

This is the model that is used the most in statistical analysis. [Use it](https://www.investopedia.com/articles/financial-theory/09/regression-analysis-basics-business.asp#:~:text=The%20regression%20equation%20simply%20describes,the%20independent%20variable%20%28x%29.&text=The%20intercept%2C%20or%20%22a%2C,referred%20to%20as%20the%20'constant.) when you want to decipher patterns in large sets of data and when there's a linear relationship between the inputs.

This method works by figuring out a formula, which represents the relationship between all the inputs found in the dataset.

For example, you can use regression to figure out how [price](https://www.investopedia.com/ask/answers/101314/what-difference-between-cost-and-price.asp) and other key factors can shape the performance of a [stock](https://www.investopedia.com/terms/s/security.asp).6

### **Neural Networks**

Neural networks were developed as a form of predictive analytics by imitating the way the human brain works. This model can deal with complex data relationships using artificial intelligence and pattern recognition.

[Use this method](https://www.investopedia.com/terms/n/neuralnetwork.asp) if you have any of several hurdles that you need to overcome. For example, you may have too much data on hand, or don't have the formula you need to find a relationship between the inputs and outputs in your dataset, or need to make predictions rather than come up with explanations.6

If you've already used decision trees and regression as models, you can confirm your findings with neural networks.6

### **Cluster Models**

Clustering is a method of aggregating data that share similar attributes. For example, Amazon.com can cluster sales based on the quantity purchased, or on the average account age of its consumers.

separating data into similar groups based on shared features, analysts may be able to identify other characteristics that define future activity.

### **Time Series Modeling**

In some cases, data relates to time, and specific predictive analytics rely on the relationship between what happens when. These types of models assess inputs at specific frequencies such as daily, weekly, or monthly iterations.

Then, analytical models can seek seasonality, trends, or behavioral patterns based on timing.

This type of predictive model is useful to predict when peak customer service periods are needed or when specific sales can be expected to jump.

## How Businesses Can Use Predictive Analytics

As noted above, predictive analysis can be used in a number of different applications. Businesses can capitalize on models to help advance their interests and improve their operations. Predictive models are frequently used by businesses to help improve [customer service](https://www.investopedia.com/terms/c/customer-service.asp) and outreach.7

Executives and business owners can take advantage of this kind of statistical analysis to determine customer behavior. For instance, the owner of a business can use predictive techniques to identify and target regular customers who might otherwise defect to a competitor.7

Predictive analytics plays a key role in advertising and [marketing](https://www.investopedia.com/terms/m/marketing.asp). Companies can use models to determine which customers are likely to respond positively to marketing and sales campaigns. Business owners can save money by targeting customers who will respond positively rather than doing blanket campaigns.7

## Benefits of Predictive Analytics

As mentioned above, predictive analytics can help anticipate outcomes when there are no obvious answers available.

Investors, financial professionals, and business leaders use models to help reduce risk. For instance, an investor or an advisor can use models to help craft an investment portfolio with an appropriate level of risk, considering factors such as age, family responsibilities, and goals.8

Businesses use them to keep their costs down. They can determine the likelihood of success or failure of a product before it is developed. Or they can set aside capital for production improvements before the [manufacturing](https://www.investopedia.com/terms/m/manufacturing.asp) process begins.8

## Criticism of Predictive Analytics

The use of predictive analytics has been criticized and, in some cases, legally restricted due to perceived inequities in its outcomes. Most commonly, this involves predictive models that result in statistical discrimination against racial or ethnic groups in areas such as credit scoring, home lending, employment, or risk of criminal behavior.

A famous example of this is the now illegal practice of [redlining](https://www.investopedia.com/terms/r/redlining.asp) in home lending by banks. Regardless of the accuracy of the predictions, their use is discouraged as they perpetuate discriminatory lending practices and contribute to the decline of redlined neighborhoods.

## **How Does Netflix Use Predictive Analytics?**

Data collection is important to a company like Netflix. It collects data from its customers based on their behavior and past viewing patterns. It uses that information to make recommendations based on their preferences.

This is the basis of the "Because you watched..." lists you'll find on the site. Other sites, notably Amazon, use their data for "Others who bought this also bought..." lists.

## **What Are the 3 Pillars of Data Analytics?**

The three pillars of data analytics are the needs of the entity that is using the model, the data and technology used to study it, and the actions and insights that result from the analysis.

## **What Is Predictive Analytics Good For?**

Predictive analytics is good for forecasting, risk management, customer behavior analytics, fraud detection, and operational optimization. Predictive analytics can help organizations improve decision-making, optimize processes, and increase efficiency and profitability. This branch of analytics is used to leverage data to forecast what may happen in the future.

## **What Is the Best Model for Predictive Analytics?**

The best model for predictive analytics depends on several factors, such as the type of data, the objective of the analysis, the complexity of the problem, and the desired accuracy of the results. The best model to choose from may range from linear regression, neural networks, clustering, or decision trees.

## The Bottom Line

The goal of predictive analytics is to make predictions about future events, then use those predictions to improve decision-making. Predictive analytics is used in a variety of industries including finance, healthcare, marketing, and retail. Different methods are used in predictive analytics such as regression analysis, decision trees, or neural networks.

1. Explain perspective analytics?

# **What Is Prescriptive Analytics? How It Works and Examples**

Amilcar has 10 years of FinTech, blockchain, and crypto startup experience and advises financial institutions, governments, regulators, and startups.

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## What Is Prescriptive Analytics?

Prescriptive analytics is a type of [data analytics](https://www.investopedia.com/terms/d/data-analytics.asp) that attempts to answer the question "What do we need to do to achieve this?" It involves the use of technology to help businesses make better decisions through the analysis of raw data. Prescriptive analytics specifically factors information about possible situations or scenarios, available resources, past performance, and current performance, and suggests a course of action or strategy. It can be used to make decisions on any [time horizon](https://www.investopedia.com/terms/t/timehorizon.asp), from immediate to long-term. It is the opposite of descriptive analytics, which examines decisions and outcomes after the fact.

### **KEY TAKEAWAYS**

* Prescriptive analytics is a form of data analytics that tries to answer "What do we need to do to achieve this?"
* It uses machine learning to help businesses decide a course of action based on a computer program’s predictions.
* Prescriptive analytics works with predictive analytics, which uses data to determine near-term outcomes.
* When used effectively, it can help organizations make decisions based on facts and probability-weighted projections instead of conclusions based on instinct.
* Prescriptive analytics isn't foolproof, as it's only as effective as its inputs.

## How Prescriptive Analytics Works

Prescriptive analytics tries to answer the question "How do we get to this point?" It relies on [artificial intelligence](https://www.investopedia.com/terms/a/artificial-intelligence-ai.asp) (AI) techniques, such as machine learning (the ability of a computer program without additional human input), to understand and advance from the data it acquires, adapting all the while.

Machine learning makes it possible to process a tremendous amount of data available today. As new or additional data becomes available, computer programs adjust automatically to make use of it, in a process that is much faster and more comprehensive than human capabilities could manage.

Prescriptive analytics works with another type of data analytics, predictive analytics, which involves the use of [statistics](https://www.investopedia.com/terms/s/statistics.asp) and modeling to determine future performance, based on current and historical data. However, it goes further: Using the predictive analytics' estimation of what is likely to happen, it recommends what future course to take.

Numerous types of data-intensive businesses and government agencies can benefit from using prescriptive analytics, including those in the financial services and health care sectors, where the cost of human error is high.

## Advantages and Disadvantages of Prescriptive Analytics

### **Advantages**

Prescriptive analytics can cut through the clutter of immediate uncertainty and changing conditions. It can help prevent fraud, limit [risk](https://www.investopedia.com/terms/r/risk.asp), increase [efficiency](https://www.investopedia.com/terms/e/efficiency.asp), meet business goals, and create more loyal customers. When used effectively, it can help organizations make decisions based on highly analyzed facts rather than jump to under-informed conclusions based on instinct.

Prescriptive analytics can simulate the probability of various outcomes and show the probability of each, helping organizations to better understand the level of risk and uncertainty they face than they could be relying on averages. Organizations that use it can gain a better understanding of the likelihood of [worst-case scenarios](https://www.investopedia.com/terms/s/scenario_analysis.asp) and plan accordingly.

### **Disadvantages**

But prescriptive analytics is not foolproof. It is only effective if organizations know what questions to ask and how to react to the answers. As such, it's only effective if its inputs are valid. If the input assumptions are invalid, the output results will not be accurate.

This form of data analytics is only suitable for short-term solutions. This means businesses shouldn't use prescriptive analytics to make any long-term ones. That's because it becomes more unreliable if more time is needed.

Not all prescriptive analytics providers are made the same. So it's important for businesses to carefully consider the technology and who provides it. Some may provide real, concrete results while others make the promise of big data and fail to deliver

Pros

* Prevents fraud, reduces risk, and increases efficiency among other things
* Simulates outcomes and shows probably of each

Cons

* Only as effective as the inputs
* Not suitable for long-term predictions/solutions
* Some big data providers provide results while others don't

## Types of Data Analytics

Data analytics is an automated process that uses [algorithms](https://www.investopedia.com/terms/a/algorithm.asp). It analyzes raw data and allows the user to make conclusions about that information. Prescriptive analytics isn't the only type of data analytics. There are several others that we discuss below.

### **Descriptive Analytics**

[Descriptive analytics](https://www.investopedia.com/terms/d/descriptive-analytics.asp) uses historical data and interprets it in a way to better understand any changes that take place in a business. Key data sets that are commonly used in descriptive analytics are changes in price, patterns in sales growth, user data, and subscriber-related [revenue](https://www.investopedia.com/terms/r/revenue.asp).

This form of big data tries to answer the question "What happened?" Having said that. business leaders can use this information to recognize their strengths and weaknesses. This allows them to make better decisions and enhance their business strategies.

Descriptive analytics can be a useful business solution when used in conjunction with other forms, such as prescriptive analytics.

### **Diagnostic Analytics**

This type of data analytics tries to ask the question "Why did this happen?" As such, it requires much more diverse data inputs. But there's a little guesswork involved because businesses use it to find out why certain trends pop up. For instance, it tries to figure out whether there's a relationship between a certain market force and sales or if a certain ad campaign helped or hurt sales of a particular product.

### **Predictive Analytics**

[Predictive analytics](https://www.investopedia.com/terms/p/predictive-analytics.asp) tries to surmise what could happen in the immediate future by using historical data and making predictions about the future. Businesses can use this form of data analytics to find opportunities for growth and improvement as well as the chance to recognize risks that need to be addressed.

## Examples of Prescriptive Analytics

Numerous data-intensive businesses and government agencies can benefit from using prescriptive analytics. This includes companies in the financial services and health care [sectors](https://www.investopedia.com/terms/s/sector.asp), where the cost of human error is high. For instance, prescriptive analytics could be used to:

* Evaluate whether a local fire department should require residents to evacuate a particular area when a wildfire is burning nearby
* Predict whether an article on a particular topic will be popular with readers based on data about searches and social shares for related topics
* Adjust a worker training program in real-time based on how the worker is responding to each lesson

The following are examples where prescriptive analytics can be used in various settings.

### **Prescriptive Analytics for Hospitals and Clinics**

Prescriptive analytics can be used by hospitals and clinics to improve the outcomes for patients. It puts health care data in context to evaluate the cost-effectiveness of various procedures and treatments and to evaluate official clinical methods.

It can also be used to analyze which hospital patients have the highest risk of re-admission so that [health care providers](https://www.investopedia.com/articles/markets/030916/worlds-top-10-health-care-companies-unh-mdt.asp) can do more, via patient education and doctor follow-up to stave off constant returns to the hospital or emergency room.

### **Prescriptive Analytics for Airlines**

Suppose you are the [chief executive officer](https://www.investopedia.com/terms/c/ceo.asp) (CEO) of an airline and you want to maximize your company’s profits. Prescriptive analytics can help you do this by automatically adjusting ticket prices and availability based on numerous factors, including customer demand, weather, and gasoline prices.

When the algorithm identifies that this year’s pre-Christmas ticket sales from Los Angeles to New York are lagging last year’s, for example, it can automatically lower prices, while making sure not to drop them too low in light of this year’s higher oil prices.

At the same time, when the algorithm evaluates the higher-than-usual demand for tickets from St. Louis to Chicago because of icy road conditions, it can raise ticket prices automatically. The CEO doesn’t have to stare at a computer all day looking at what’s happening with ticket sales and market conditions and then instruct workers to log into the system and change the prices manually. Instead, a computer program can do all of this and more—and at a faster pace, too.

### **Prescriptive Analytics in Banking**

[Banking](https://www.investopedia.com/personal-finance/banking-101/) is one of the industries that can benefit from prescriptive analytics the most. That's because companies in this sector are always trying to find ways to better serve their customers while ensuring they remain profitable. Applying prescriptive analytical tools can help the banking sector to:

* Create models for customer relationship management
* Improve ways to cross-sell and upsell products and services
* Recognize weaknesses that may result in losses, such as [anti-money laundering](https://www.investopedia.com/terms/a/aml.asp) (AML)
* Develop key security and regulatory initiatives like compliance reporting

### **Prescriptive Analytics in Marketing**

Just like banking, data analytics is very critical in the marketing sector. Marketers can use prescriptive analytics to stay ahead of consumer trends. Using past trends and past performance can give internal and external marketing departments a competitive edge.

By employing prescriptive analytics, marketers can come up with effective campaigns that target specific customers at specific times like, say, advertising for a certain demographic during the Superbowl. Corporations can also identify how to engage different customers and how to effectively price and [discount](https://www.investopedia.com/terms/d/discount.asp) their products and services.

## **What Does Prescriptive Analytics Mean?**

Prescriptive analytics is a form of data analytics that helps businesses make better and more informed decisions. Its goal is to help answer questions about what should be done to make something happen in the future. It analyzes raw data about past trends and performance through machine learning (so very little human input, if any at all) to determine possible courses of action or new strategies generally for the near term.

## **Why Is Prescriptive Analytics So Important for Businesses?**

Prescriptive analytics is very important for businesses because it allows them to look at their past performance and ask themselves "What do we need to do to get to this point?" It is critical for businesses that are in need of a turnaround, especially those that are struggling with low performance metrics. Using this type of data analytics allows them to come up with strategies and a suitable course of action and, perhaps, how long it may take for them to achieve these goals.

## **What Are the Other Forms of Data Analytics?**

The other forms of data analytics are descriptive analytics, diagnostic analytics, and predictive analytics. Each tries to ask a different question and may be used by businesses together or separately to make better, more informed decisions.

## The Bottom Line

There are many things businesses can do to ensure their success and make better decisions. Data analytics is one tool that they have at their disposal to reach these goals. Prescriptive analytics is a form of data analytics that uses past performance and trends to determine what needs to be done to achieve future goals. Even with the obvious benefits, business leaders should understand that prescriptive analytics has its own drawbacks. Knowing where to start and choosing the right company or software to help you reach your goals can certainly help you in the long run.

1. Write five real-life questions that PowerBi can solve.

## 1**. Waiting On Figures**

**Having to hold off on major business decisions because you’re unable to collect figures from a colleague or need to sift through numerous reports on a server to find what you need may have been considered normal routine back in the day, but business has progressed, and waiting for data reports is no longer acceptable.**[**Power BI**](https://www.kizan.com/big-data-and-analytics)**allows you to access your company's data analytics almost instantly. On top of that, it also makes the data easy to decipher with advanced visualizations which can be shared at the touch of a button.**

**2. Using Data From Old Reports**

**While being able to**[**share documents**](https://www.kizan.com/document-management)**(such as quarterly reports) with employees through the cloud was exciting when it first came out, it leaves too much room for human error. For example, it’s not uncommon for documents shared in a cloud to be mislabeled, altered, and even deleted by accident. Even if stored in the correct location, finding reports this way can be incredibly time-consuming. All of these factors can lead to unnecessary mistakes and delays.**

**Using Power BI reduces the possibility of error by allowing reports to be run in seconds using only the most current data. This ensures that reports can’t be altered or deleted and eliminates the time spent sifting through files to find the correct data.**

**3. Excessive Time Spent Preparing For Presentations**

**Whether it’s for a meeting with potential investors, sharing the latest figures with your shareholders, or leading an internal meeting with your colleagues, presentation preparation can be tedious. On top of collecting all of the data you want to share, the information has to then be put into a visually appealing presentation. If you want to include charts, graphs, and images, presentations can take a significant amount of time to produce. In addition to that, by the time the presentation is complete, the data will already be outdated.**

**Power BI can quickly and easily create visual representations of your data and provide stunning and accurate presentations for your meetings. Using Power BI’s**[**automated reporting tools**](https://info.kizan.com/business-process-automation-ebook)**can save hours of preparation.**

**4. Being Unable To Find Specific Data Sets**

**Sifting through spreadsheets in search of specific data sets is time-consuming and inefficient. One of the most useful Power BI solutions is the ability to easily search for data and data-sets.**

**Power BI allows IT members to publish data catalogs for others to view. This makes it easier for you to find the data sets needed to perform an analysis. Additionally, using natural language technology and its Question & Answer feature provides a more natural experience to locate and better understand your BI.**

**5. Not Being Able To Determine Your Level Of Success**

**While business intelligence offers a lot of useful information,**[**not everyone knows how to use it**](https://info.kizan.com/unlocking-your-datas-hidden-treasures-ebook-download)**. Even with the numbers in plain view, it can be difficult to determine whether or not your business is successful and what areas need improvement. Using Power BI’s Question & Answer feature, it’s now possible to ask your software these questions using natural language. Ask what your profits were for that month or how customer subscription numbers compare to last year’s.**

**The natural language technology makes it incredibly easy, and you don’t have to worry about putting your questions in any specific format. The tool will also draw your attention to any problem areas that need to be addressed, ensuring you don’t miss even the smallest opportunities to make a profit.**

**Common business issues are slowing you down, and it’s not only a poor use of time but it may also be costing you business. Your competition is using business intelligence tools to stay ahead of the game, and it’s only a matter of time before you fall behind. Take advantage of Power BI solutions that can make your company’s day-to-day activity far more efficient, tech-savvy, and less frustrating for you and your employees.**

**Stay ahead of the competition by using the tools available to provide you with useful information and take your current business to the next level.**