**Power BI Assignment 1**

**1.What do you mean by BI ? Explain.**

**Ans:-** Business intelligence

Business intelligence (BI) refers to the procedural and technical infrastructure that collects, stores, and analyzes the data produced by a company's activities. BI is a broad term that encompasses data mining, process analysis, performance benchmarking, and descriptive analytics.

## 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.

**2. How Power BI helps in BI and how does it’s help Analyst ? Explain.**

1. **Ans:-**

Microsoft Power BI is a [data visualization](https://www.coursera.org/articles/data-visualization) and reporting platform that is used by businesses and professionals every day. While the platform is commonly used by business analysts, it is also designed to be easily accessible for those without any specialized data knowledge.

In this article, you’ll learn more about Power BI, what modern businesses use it for, and the professionals who typically work with it. Toward the end, you’ll also explore some alternatives and explore online specializations and guided projects that can help you get started with this important business intelligence tool.

## What is Microsoft Power BI?

**Microsoft Power BI** is a data visualization platform used primarily for business intelligence purposes. Designed to be used by business professionals with varying levels of data knowledge, Power BI’s dashboard is capable of reporting and visualizing data in a wide range of different styles, including graphs, maps, charts, scatter plots, and more. Power BI's "AI Insights" functionality, meanwhile, uses [artificial intelligence](https://www.coursera.org/articles/what-does-ai-stand-for) to find insights within data sets for users.

Power BI itself is composed of several interrelated applications: Power BI Desktop, Pro, Premium, Mobile, Embedded, and Report Server. While some of these applications are free-to-use, paid subscriptions to the pro and premium versions provide greater analytics capabilities.

Power BI is also a part of Microsoft’s Power Platform, which includes Power Apps, Power Pages, Power Automate, and Power Virtual Agents. Created as “low-code tools,” these applications help businesses analyze and visualize data, design business solutions, automate processes, and create no-code chatbots.

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Whether you’re a data pro or are just entering the business world,  Power BI is designed to empower you with data-driven insights. Some of the most common uses for the platform include:

* Creating reports and dashboards that present data sets in multiple ways using visuals
* Connecting various data sources, such as Excel sheets, onsite [data warehouses](https://www.coursera.org/articles/data-warehouse), and cloud-based data storage, and then transforming them into business insights
* Turning data into a wide range of different visuals, including pie charts, decomposition trees, gauge charts, KPIs, combo charts, bar and column charts, and ribbon charts – among many other options
* Providing company-wide access to data, data visualization tools, and insights in order to create a data-driven work culture

**3.Explain Descriptive analytics ?**

**Ans:- 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.

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.

**4. Explain predictive Analytics ?**

## **Ans :-**

Predictive analytics is one of the four key types of [data analytics](https://www.coursera.org/articles/data-analytics), and typically forecasts what will happen in the future, such as how sales will shift during different seasons or how consumers will respond to a change in price. Businesses often use predictive analytics to make data-driven decisions and optimize outcomes.

In this article, we'll go over more about predictive analytics, including how it's used, some common benefits, and what you can do to get started in it.

## What is predictive analytics?

Businesses use data to understand what's happening—both now and in the future. **Predictive analytics** falls under the latter category. It uses historical data to predict potential future events or behaviors so companies can better position themselves in the present.

In order to calculate the future, predictive analytics relies on a number of techniques from statistics, data analytics, [artificial intelligence (AI)](https://www.coursera.org/articles/what-does-ai-stand-for), and machine learning. Some common business applications include detecting fraud, predicting customer behavior, and forecasting demand.

## **5.Explain 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.

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## 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.

5.Write five real life question that power Bi can solve .

Microsoft’s Power BI was recently recognized as a [Magic Quadrant Leader](https://info.microsoft.com/ww-landing-2020-gartner-magic-quadrant-for-analytics-and-business-intelligence.html?LCID=EN-US) in analytics and business intelligence platforms. One reason Power BI enjoys and maintains this coveted position is due to its ease of integration within any company, regardless of team size. **Let’s take a look at the four most common implementation scenarios, implementation tools, and our recommendations and best practices. In a broad sense, Power BI implementation scenarios are:**

1. **Personal or self-service BI**
2. **Small team**
3. **Large team**
4. **Enterprise-wide**

### Personal BI with Power BI

Also known as self-service BI, Personal BI is aptly named, as this is the use case where you don the multiple hats of a data modeler, report author, and content consumer. This scenario requires Power BI desktop, a Power BI data gateway (if connecting to on-premises sources), and a Power BI license (free or paid). While a pro license (paid license) is not needed as you will not share the content, we recommend provisioning a single Power BI Pro license as there are features within Power BI Service that require a Pro license