**Power BI Assignment 1**

1. What do you mean by BI? Explain.

Ans - BI(Business Intelligence) is a set of processes, architectures, and technologies that convert raw data into meaningful information that drives profitable business actions. It is a suite of software and services to transform data into actionable intelligence and knowledge. BI has a direct impact on organization’s strategic, tactical and operational business decisions. BI supports fact-based decision making using historical data rather than assumptions and gut feeling. BI tools perform data analysis and create reports, summaries, dashboards, maps, graphs, and charts to provide users with detailed intelligence about the nature of the business.

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

### Ans -

### 1.Extract data insights with no coding skills required-

One of the main strengths of Power BI is its intuitive user interface that allows both technical and non-technical analysts to build data visualizations and analyses efficiently. The user-friendly drag-and-drop interface makes it easy to answer complex data-related questions without the need for programming skills. This simplicity lowers the barrier for users to perform advanced analytics such as trend analyses, regressions, and statistical summaries. Power BI can also be integrated with a variety of existing Microsoft apps, such as Microsoft teams, Excel, and PowerPoint, which makes integrating data insights into existing workflows much easier.

2.Democratize data insights with dashboards-

A classic BI application most people will be familiar with is the **dashboard**, where data is obtained from multiple sources and presented visually in charts and graphs to give a sense of the company’s processes and strategies. Power BI comes with many reporting features for users to readily create well-designed interactive dashboards. It can also connect to a wide range of data sources and can help you create powerful data models (e.g. SQL Server, Excel spreadsheets, Amazon Redshift, etc.). As a result, these dashboards can be enriched with comprehensive data from various applications across the organization. These dashboards go a long way in aligning an organization’s strategic efforts, uncovering critical insights, and speeding up enterprise-wide decision-making. When many users are trained to create such dashboards, data insights can be democratized at scale to help transform the business into a data-driven company. These dashboards go a long way in aligning an organization’s strategic efforts, uncovering critical insights, and speeding up enterprise-wide decision-making. When many users are trained to create such dashboards, data insights can be democratized at scale to help transform the business into a data-driven company.

### 3.Tell data stories with advanced data visualization-

### Compelling data storytelling is more important than ever, given the burgeoning amounts of data generated in the digital age. Dashboards are great for monitoring data and telling users what is happening. However, **data stories** help shape the data into a step-by-step process to explain why specific trends are happening. Power BI allows users to string together a series of visualizations (including dashboards) to form a visual story to communicate data insights, provide context, and demonstrate how decisions relate to outcomes. The ability to weave advanced visualizations into a coherent data narrative is what sets Power BI apart from other tools like Excel. These data stories are highly effective in framing a compelling case to communicate actionable insights to decision-makers, which aligns with the primary goal of business intelligence.

3. Explain Descriptive analytics?

Ans - Descriptiveanalytics is a statistical method that is used to search and summarize historical data in order to identify patterns or meaning.

**Descriptive Analytics** is the examination of data or content, usually manually performed, to answer the question “What happened?” (or What is happening?), characterized by traditional business intelligence (BI) and visualizations such as pie charts, bar charts, line graphs, tables, or generated narratives.

Data analysts can use descriptive statistics to summarize more or less any type of data, although it helps to think of it as the first step in a more protracted process. That’s because while descriptive statistics may describe trends or patterns, it won’t dig deeper. For this, we need tools like [diagnostic](https://careerfoundry.com/en/blog/data-analytics/diagnostic-analytics/) and [predictive](https://careerfoundry.com/en/blog/data-analytics/predictive-analytics-examples/) analytics. Nevertheless, descriptive analytics is exceptionally useful for introducing yourself to unknown data.

The following kinds of data can all be summarized using descriptive analytics:

* Financial statements
* Surveys
* Social media engagement
* Website traffic
* Scientific findings
* Weather reports
* Traffic data

The list goes on! Essentially, any data set can be summarized in one way or another, meaning descriptive analytics has an almost endless number of applications.

4. Explain Predictive analytics?

Ans - Predictive analytics is a branch of advanced analytics that makes predictions about future outcomes using historical data combined with statistical modelling, data mining techniques and[machine learning](https://www.ibm.com/cloud/learn/machine-learning). Companies employ predictive analytics to find patterns in this data to identify risks and opportunities. Predictive analytics is often associated with big data and[data science](https://www.ibm.com/analytics/data-science).

Today, companies today are inundated with data from log files to images and video, and all of this data resides in disparate data repositories across an organization. To gain insights from this data, data scientists use[deep learning](https://www.ibm.com/cloud/learn/deep-learning) and machine learning algorithms to find patterns and make predictions about future events. Some of these statistical techniques include logistic and [linear regression](https://www.ibm.com/topics/linear-regression) models, [neural networks](https://www.ibm.com/cloud/learn/neural-networks) and decision trees. Some of these modelling techniques use initial predictive learnings to make additional predictive insights.

**Predictive Analytics Techniques**

Predictive analytics incorporates a variety of data analysis approaches, including data mining, machine learning, and others. The following are the techniques used in predictive analytics:

**Decision Trees**

A [decision tree](https://www.simplilearn.com/the-power-of-decision-trees-in-machine-learning-article) is an analytics methodology based on Machine Learning that uses data mining algorithms to forecast the potential risks and benefits of undertaking certain options. It is a visual chart that resembles an upside-down tree that depicts the prospective result of a decision. When used for analytics, it can solve all forms of classification problems and answer difficult issues.

**Neural Networks** [Neural networks](https://www.simplilearn.com/tutorials/deep-learning-tutorial/neural-network) are biologically inspired data processing systems that use historical and present data to forecast future values. Their architecture allows them to identify complicated connections buried in data in a way that replicates the pattern detecting systems of the human brain.

They are widely used for image recognition and patient diagnosis and comprise many layers that accept data (input layer), compute predictions (hidden layer), and provide output (output layer) in the form of a single prediction.

**Text Analytics** Text Analytics is used when a company wants to anticipate a numerical number. It is built on approaches from statistics, machine learning, and linguistics. It assists in predicting the themes of a document and analyses words used in the supplied form.

**Regression Model** A regression method is crucial for the organization when it comes to estimating a numerical number, such as how long it will take a target audience to return to an airline reservation before purchasing, or how much money someone would spend on vehicle payments over a specific length of time.

* 1. Explain perspective analytics?

Ans -

**Prescriptive analytics** is a statistical method that focuses on finding the ideal way forward or action necessary for a particular scenario, based on data. Prescriptive analytics uses both descriptive and [predictive analytics](https://www.tibco.com/reference-center/what-is-predictive-analytics) but the focus here remains on actionable insights rather than data monitoring. The input of prescriptive analytics is the outcome of predictive analytics algorithms. You not only predict what the future holds, but you leverage that prediction to take the best course of action for the future. A more formal definition is that prescriptive analytics is a statistical approach utilized to generate recommendations and aid decision-making based on the computational outcomes of algorithmic models.

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

Ans – Real-life questions that PowerBi can solve are-

1.Waiting on figures

2.Using data from old reports

3.Excessive time spent preparing for presentations

4.Being unable to find specific datasets

5. Not being able to determine your level of success