**POWER BI – ASSIGNMENT 1**

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

* BI Stands for Business Intelligence. The Primary Goal of BI is to support better decision-making with an organization by providing historical, current and predictive views of business operations.
* The Key Components of Business Intelligence are:

1. **Data Integration**: BI systems gather data from various sources within the organization, such as databases, spreadsheets, and other software systems. This data is then integrated into a unified format for analysis.
2. **Data Warehousing**: Often, BI systems utilize data warehouses, which are central repositories of integrated data from one or more disparate sources. Data warehouses are designed to support reporting and analysis.
3. **Data Analysis**: BI tools enable users to analyze large sets of data to identify trends, patterns, and insights. This analysis can range from simple queries to complex data mining algorithms.
4. **Reporting and Visualization**: BI platforms offer reporting and visualization capabilities to present the analyzed data in a meaningful way. This can include interactive dashboards, charts, graphs, and reports that help users understand and interpret the data more easily.
5. **Performance Monitor**: BI solutions often include performance management features that allow organizations to track key performance indicators (KPIs) and monitor progress towards business goals.
6. **Predictive Analytics**: Some advanced BI systems incorporate predictive analytics to forecast future trends and outcomes based on historical data and statistical algorithms.

**Q.2** How Power-BI helps in BI, and how does it help Analysts? Explain.

* Here's how Power BI aids in BI and benefits analysts:

1. **Data Visualization**: Power BI allows analysts to create interactive and visually appealing reports and dashboards using a wide range of visualization options such as charts, graphs, maps, and tables. This makes it easier to convey complex data insights to stakeholders and enables them to understand trends and patterns more intuitively.
2. **Data Integration**: Power BI can connect to a variety of data sources, including databases, cloud services, Excel files, and web services. Analysts can easily import data from these sources into Power BI, integrate them, and create a unified view of their data for analysis.
3. **Data Modeling**: With Power BI's built-in data modeling capabilities, analysts can create relationships between different data tables, define calculated columns and measures, and perform data transformations such as filtering and sorting. This enables them to prepare and shape the data according to their analysis needs.
4. **Advanced Analytics**: Power BI supports advanced analytics features such as forecasting, clustering, and regression analysis through integrations with Azure Machine Learning and R scripts. Analysts can leverage these capabilities to uncover deeper insights and predictive patterns in their data.
5. **Collaboration and Sharing**: Power BI allows analysts to collaborate with colleagues by sharing reports and dashboards securely within their organization or with external stakeholders. They can also set up scheduled data refreshes to ensure that their reports are always up-to-date.
6. **Mobile Accessibility**: Power BI offers mobile apps for iOS, Android, and Windows devices, allowing analysts to access their reports and dashboards from anywhere, at any time. This enables them to stay informed and make data-driven decisions on the go.

Q.3 Explain Descriptive analytics?

* Descriptive analytics is a branch of analytics that focuses on summarizing historical data to understand what has happened in the past.
* It involves analyzing data to gain insights into trends, patterns, and relationships within the data set.
* The primary goal of descriptive analytics is to describe and summarize data in a meaningful way, providing stakeholders with a clear understanding of past events or performance.

1. **Data Aggregation**: Descriptive analytics involves aggregating and summarizing large volumes of data into more manageable and understandable forms. This could include calculating summary statistics such as mean, median, mode, standard deviation, and percentiles.
2. **Data Visualization**: Visual representations such as charts, graphs, and dashboards are commonly used in descriptive analytics to present data in a visually appealing and easy-to-understand manner. Visualizations help stakeholders quickly grasp insights from the data and identify trends or patterns.
3. **Performance Monitoring**: Descriptive analytics enables organizations to monitor key performance indicators (KPIs) and track progress over time. By analyzing historical data, stakeholders can assess how well the organization has performed in the past and identify areas for improvement.
4. **Root Cause Analysis**: Descriptive analytics can help uncover the underlying causes behind certain trends or patterns observed in the data. By examining historical data and identifying correlations between variables, analysts can gain insights into what factors contribute to specific outcomes or events.

Q.4 Explain Predictive analytics?

* Predictive analytics is the process of using data, statistical algorithms, and machine learning techniques to predict future outcomes based on historical data.
* Here's a breakdown of the key components of predictive analytics:

1. **Data Collection**: The first step is gathering relevant data from various sources. This can include structured data from databases, as well as unstructured data from sources like social media, sensors, or text documents.
2. **Data Cleaning and Preprocessing:** Raw data often contains errors, missing values, or inconsistencies that need to be addressed before analysis. Data cleaning involves removing or correcting these issues to ensure the accuracy of the analysis.
3. **Exploratory Data Analysis (EDA):** This step involves exploring the data to understand its characteristics, relationships, and patterns using charts and graphs to identify trends.

Q.5 Explain perspective analytics?

• The main intent of perspective analysis is in understanding different perspective can help to solve problems in business world to make better decisions.

• Seeing the problem from multiple angles can help to take better decisions and give more effective solutions.

• Understanding different perspectives might involve talking to your employees, customers, or other stakeholders to gather information and insights.

* Steps to Execute Perspective Analysis:

1. **Market Analysis:** First we need to conduct a market research to know which age group we need to target for our product, for that a research has to be done on a small group of people to know our target audience and their preferences.
2. **Listening to Your Team:** Let's say that you have developed a new software tool for managing customer data. Your development team has been working on the product for months now, and they believe that they have created a tool that is easy to use. However, before launching the product, they decided to get feedback from employees of the customer service department, who will be using this tool on a daily basis.

* During the feedback, employees shared their thoughts on the product, and it became clear that there are some major issues that they might face in the future. For example, some of your employees find the interface very confusing, while others have issues navigating between different sections of the tool. Also, few of them believe that certain features are missing that being included would have made their jobs easier.
* After this, the development team goes back to make several changes to the product, including changes in the interface, adding new features, and improving the navigation. They work closely with the customer service department to make sure that the product meets their needs and is easy to use.

**Creative Solutions:** Let’s say you have a company that produces a line of smartphones. After launching a new model, you have started receiving a significant number of customer complaints about the battery life. Your team has started investigating the issue urgently, but they are unable to identify the root cause of the problem.

To get to the bottom of the issue, you decide to take different opinions. You gather feedback from customers, customer service representatives, and technicians who have worked on these devices. Through this process, you identify several perspectives on the issue, including:

* Some customers believe that the battery drains too quickly even when they're not actively using the phone.
* Other customers report that battery life decreases rapidly when using certain apps or features.
* Technicians have noticed that some phones have faulty batteries, while others are fine.

By analysing these different perspectives, you are able to pinpoint the root cause of the battery problem. You discover that there are actually two separate problems: faulty batteries in some devices, and a software issue that is causing excessive battery drain.

With this information in hand, your development team is able to create a plan to address the issue. They recall devices with faulty batteries, and they release a software update that addresses the battery drain issue. Now, you can identify and solve the problem, leading to happier customers and a better product.

Q.6 Write five real-life questions that Power Bi can solve.

1. **Sales Performance Analysis**:

* Can know which sales channels or campaigns are getting the highest revenue.
* We can know the sales trends over time and how they vary across different regions or product categories.

1. **Customer Segmentation:**

* How can we segment our costumers based on purchase behavior and preferences?
* We can know what are the characteristics of customer segment and how to personalize marketing strategies.

1. **Operational Efficiency and Performance:**

* How efficient are operations and are there any areas for improvement in terms of productivity or resource allocation?
* What are the key performance metrics for different departments or processes, and how they contribute to overall organizational goals

1. **Risk Management:**

* What are the risks faced by the organization and how we can lower the risk effectively?
* How do external factors such as market conditions or regulatory changes impact risk exposure ?

1. **Supply Chain Optimization:**

* How can we optimize the supply chain to minimize lead times, reduce costs and improve overall efficiency ?
* Are there any Bottlenecks or inefficiencies in the supply chain that need to be addressed?