**Power BI Assignment 1**

1. What do you mean by BI? Explain.

* BI(Businesss Intelligence) is a set of processes, architectures, and technologies that collects, stores, and analyses company data to convert raw data into meaningful information that drives profitable business actions. It is a suite of software and services to transform data into actionalble 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.
* BI helps in measurement by creating KPI(Key Performance Indicators) based on historic data. It identifies and sets benchmarks for varied processes. With BI systems, organizations can identify market trends and spot business problems that need to be addressed.
* BI helps on data visualization that enhances the data quality and thereby the quality of decision making. BI systems can be used not just by enterprises but also by SME(Small and Medium Enterprises).

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

Power BI is a business analytics product offered by software giant Microsoft.

It is a business intelligence(BI) platform hat provides nontechnical business users with tools for aggregating, analysing, visualizing and sharing data.

Power BI’s user interface is fairly intuitive for users familiar with Excel, and its deep integration with other Microsoft products makes it a versatile self-service tool that requires little upfront training.

Included within Power BI are several components that help users create and share data reports. Those are the following:

* Power Query: a data mashup and transformation tool
* Power Pivot: a memory tabular data modeling tool
* Power View: a data visualization tool
* Power Map: a 3D geospatial data visualization tool
* Power Q&A: a natural language question and answering engine

Power BI helps Analysts by:

* **Extracting 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 nedd 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.

* **Democratizing 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. 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.

* **Telling 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 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.

1. Explain Descriptive analytics?

* Descriptive analytics is the most common, fundamental form of business analytics used to monitor trends and keep track of operational performance – by summarizing and highlighting patterns in past and existing data.
* The practice of descriptive analytics produces business metrics, reports, and KPIs to help businesses track their performance and different trends. As a result, companies understand what’s happened thus far and, when combined with the other types of business analytics, get an idea of why things happened, what things may occur, and how to prepare for future events.
* Most commonly reported financial metrics are a product of descriptive analytics, for example, year-over-year pricing changes, month-over-month sales growth, the number of users, or the total revenue per subscriber. These measures all describe what has occurred in a business during a set period.
* Descriptive analytics uses a full range of data to give an accurate picture of what has happened in a business and how that differs from other comparable periods. These performance metrics can be used to flag areas of strength and weakness to inform management strategies.
* The two main methods in which data is collected for descriptive analytics are data aggregation and data mining. Before data can be made sense of, it must be first gathered and then parsed into manageable information. This information can then be meaningfully used by management to comprehend where the business stands.

1. Explain Predictive analytics?

Predictive analytics uses statistics and modelling techniques to make predictions about future outcomes and performance. It looks at current and historical data patterns to determine if those patterns are likely to emerge again. This allows businesses and investors to adjust where they use their resources to take advantage of possible future events. Predictive analysis can be used to improve operational efficiencies and reduce risk.

Predictive analytics draws on a series of techniques to make these determinations, including artificial intelligence(AI), data mining, machine learning, modelling, and statistics.

Below are a few industry use cases to illustrate how predictive analytics can inform decision-making within real-world situations.

* Banking: Financial services use machine learning and quantitative tools to predict credit risk and detect fraud.
* Healthcare: Predictive analytics in health care is used to detect and mange the care of chronically ill patients, as well as to track specific infections such as sepsis.
* Human resources(HR): HR teams use predictive analytics and employee survey metrics to match prospective job applicants, reduce employee turnover and increase employee engagement. This combination of quantitative and qualitative data allows businesses to reduce their recruiting costs and increase employee satisfaction, which is particularly useful when labor markets are volatile.
* Marketing and sales: While marketing and sales teams are very familiar with business intelligence reports to understand historical sales performance, predictive analytics enables companies to be more proactive in the way that they engage with their clients across the customer lifecycle.
* Supply chain: Businesses commonly use predictive analytics to manage product inventory and set pricing strategies. It helps companies meet customer demand without overstocking warehouses. It also enables companies to assess the cost and return on their products over time.

1. Explain prescriptive analytics?

Prescriptive analytics is a type of data analytics that attempts to answer the question “What do we need to do to achieve this?”

Prescriptive analytics is the process of using data to determine an optimal course of action. By considering all relevant factors, this type of analysis yields recommendations for next steps. Because of this, prescriptive analytics is a valuable tool for data-driven decision-making.

Machine learning algorithms are often used in prescriptive analytics to parse through large amounts of data faster – and often more efficiently – than humans can. Using “if” and “else” statements, algorithms comb through data and make recommendations based on a specific combination of requirements. For instance, if at least 50% of customers in a dataset selected that they were “very unsatisfied” with your customer service team, the algorithm may recommend additional training. While algorithms can provide data-informed recommendations, they cannot replace human discernment. Prescriptive analytics is a tool to inform decisions and strategies and should be treated as such. Your judgement is valuable and necessary to provide context and guard rails to algorithmic outputs.

Following are some examples where prescriptive analytics can be used in various settings.

* 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.
* Airlines: Suppose you are the 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.
* Banking: 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.

1. Write five real-life questions that PowerBi can solve.
2. Financial Performance Analysis:

Financial performance analysis is based on optimizing financial analysis for a firm that provides accounting services to clients who seek timely delivery of critical financial reports. You can set up the analysis to quickly access reliable financial data. The project might be used to: migrate traditional financial reporting from Excel to current BI dashboards and provide customers with an effective tool to track their financial health and productivity.

You can leverage Power BI data visualization in this project for three different cases-

- for the summary/overview page, you can use Funnel Charts, Combo Charts (Column Charts, Line Charts, Waterfall Charts);

-for the income statement page, you can use Cards, Funnel Charts, and Combo Charts (Line Charts and Column Charts); and

- for the balance sheet page, you can use Cards and Tables.

1. Product Sales Data Analysis:

Businesses must keep detailed records of their sales for a variety of reasons. However, if there is too much data, it often becomes difficult to keep track of everything. Analyzing sales data allows companies to keep track of their sales and answer all critical questions regarding their performance.

This sales data analysis entails analyzing a company's sales data and indicating profit by product, sales, and other significant factors that might influence the company's performance. The dashboard could leverage Power BI visualization types such as Pie Charts, Bar Charts, Doughnut Charts, Funnel Charts, etc.

1. Covid-19 Insights Analysis:

Covid-19 Insights Analysis aims to thoroughly overview the Covid-19 pandemic's essential parameters, the latest situation, and detailed country-level evaluations. You can create a dashboard that gives valuable information regarding cases (active, deceased, or recovered), mortality, and recovery rates by nation and timeframe. Also, the dashboard might even include a management summary of the most important KPIs and a thorough analysis of individual report pages.

As for the Power BI data visualization features, you can use- Bar Charts, Point Maps, Line Charts, and Column Charts for the overview page; Doughnut Charts for category-wise case analysis; and Decomposition Trees for country-wise case analysis. You might also use Heat Maps to enhance your project’s dashboard visualization.

1. Movie Sales Visualization:

Movie Sales Visualization aims to take a dataset that shows movie sales over time and turn it into an interactive visual experience. The dataset could include a list of movies having an IMDb score of 6 or higher and the parameters Budget, Gross, Genre, and Scores.

You can create a custom Radial Bar Chart and use Slicers to pick Genre, Country, and score range to be integrated directly into PowerBI. This would display parameters such as Average Score and Gross Collections for the selected set. Plotting a Histogram on the score variable using year and genre as slicers will show the frequency distribution of the IMDb scores. A KDE plot can provide a density graph and insights into the average rating for a specific genre and distribution for a given timeframe.

1. OTT Media Dashboard:

This unique Power BI project entails visualizing various information related to multiple OTT platforms such as Netflix, Hotstar, Amazon Prime, etc. You can access this project's entire [OTT media platform dataset](https://github.com/undiscovered-genius/Netflix-Prime-Hotstar-Dashboard-Power-BI/tree/main/dataset) from Github. Use the Query Editor in Power BI for data cleaning and preparation. Once your data is ready for visualization, you can display the visuals using various plots, graphs, cards, etc.