Power BI assignment 1

Ans.1-

Business intelligence combines business analytics, data mining, data visualization , data tools and infrastructure, and best practices to help organizations make more data-driven decisions. In practice, you know you’ve got modern business intelligence  when you have a comprehensive view of your organization’s data and use that data to drive change, eliminate inefficiencies, and quickly adapt to market or supply changes. Modern BI solutions prioritize flexible self-service analysis, governed data on trusted platforms, empowered business users, and speed to insight.

Businesses and organizations have questions and goals. To answer these questions and track performance against these goals, they gather the necessary data, analyze it, and determine which actions to take to reach their goals.

On the technical side, raw data is collected from business systems. Data is processed and then stored in data warehouses, the cloud, applications, and files. Once it’s stored, users can access the data, starting the analysis process to answer business questions.

BI platforms also offer data visualization tools, which convert data into charts or graphs, as well as presenting to any key stakeholders or decision-makers.

Ans.2

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.

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.

(note –sorry, as I took help from google )

Ans.3

*Descriptive analytics*  is the process of using current and historical data to identify trends and relationships. It’s sometimes called the simplest form of data analysis because it describes trends and relationships but doesn’t dig deeper.

Descriptive analytics is relatively accessible and likely something your organization uses daily. Basic statistical software, such as Microsoft Excel or data visualization tools, such as Google Charts and Tableau, can help parse data, identify trends and relationships between variables, and visually display information.

Descriptive analytics is especially useful for communicating change over time and uses trends as a springboard for further analysis to drive decision-making.

Working of DA :-

In order to analyze data, companies first need to collect and aggregate raw data from various sources and convert it into a common format for analysis. Then they’re ready to analyze the data. Many companies use data intelligence, or a group of methods and tools used to collect and analyze data then form conclusions and action plans based on the findings. Others use spreadsheet formulas to apply basic descriptive analytics to the aggregated data, generating KPIs and other statistics that are then included in reports.

Ans.4

The term *Predictive analytics* refers to the use of statistics and modeling techniques to make predictions about future outcomes and performance. Predictive analytics 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 also be used to improve operational efficiencies and reduce risk.

* Predictive analytics uses statistics and modeling techniques to determine future performance.
* Industries and disciplines, such as insurance and marketing, use predictive techniques to make important decisions.
* Predictive models help make weather forecasts, develop video games, translate voice-to-text messages, customer service decisions, and develop investment portfolios.
* People often confuse predictive analytics with machine learning even though the two are different disciplines.

Types of predictive models include decision trees, regression, and neural networks.

Working of Pd.A :-

As [big data](https://www.villanovau.com/resources/bi/what-is-big-data/) continues to grow in demand, it is important for professionals, especially those without an understanding of data science or [business analysis](https://www.villanovau.com/resources/business-analysis/business-intelligence-business-analysis-critical/), to learn the basics of predictive analytics technology and how it works.

According to the Harvard Business Review, successful predictive analytics strategies need three things.

1. **Data** – The most common barrier faced by organizations trying to implement predictive analytics is a lack of reliable data.
2. **Statistics** – Regression analysis, which estimates relationships among different variables, is the primary tool used by organizations for predictive analytics.
3. **Assumptions** – Every predictive model has an assumption behind it, and it is important to know what that assumption is and monitor whether it is still true. The general assumption in predictive analytics is that the future will continue to mimic the past.

Businesses that are able to gather enough relevant data, develop the right type of statistical model and monitor their assumptions carefully will typically produce more accurate predictions of the future.

Ans.5

*Prescriptive analytics*  is a type of data analytics 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, from immediate to long-term. It is the opposite of descriptive analytics, which examines decisions and outcomes after the fact.

* 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.

Working of Ps.A :-

Prescriptive analytics tries to answer the question "How do we get to this point?" It relies on artificial intelligence (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 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.

Ans.6

Power BI helps you quickly identify data quality issues and provides numerous ways to address them. Power Query provides you with exciting features to clean and prepare data for analysis. The data profiling tools can help you remove all the inconsistencies, null values, and data quality problems.