POWER BI ASSIGNMENT 1

1. What do you mean by BI? Explain.

Business Intelligence systems combine data gathering, data storage, and knowledge management with data analysis to evaluate and transform complex data into meaningful, actionable information, which can be used to support more effective strategic, tactical and operational insights and decision-making. Business Intelligence environment consists of a variety of technologies, applications, processes, strategies, products and technical architectures used to enable the collection, analysis, presentation and dissemination of internal and external business information.

Business Intelligence technologies use advanced statistics and predictive analysis to help business draw conclusions from data analysis, discover patterns and forecast future events in business operations. Business Intelligence reporting is not a linear practice, rather it is a continuous multifaceted cycle of data access, exploration, and information sharing. Common business functions include :

- Data Mining : Sorting through large datasets using databases, statistics, and Machine Learning to identify trends and establish relationships.
- Querying : A request for specific data or information from a database.
- Data Preparation : The process of combining and structuring data in order to prepare it for analysis.
- Reporting : Sharing operating and financial data analysis with decision – makers so they can draw conclusions and make decisions.
- Benchmarking : Comparing current business processes and performance metrics to historical data to track performance against industry bests.
- Descriptive Analysis : The interpretation of historical data to draw comparisons and better understand changes that have occurred in a business.
- Statistical Analysis : Collecting the results from Descriptive analysis and applying statistics in order to identify trends.
- Data Visualization : Provides visual representation such as charts and graphs for easy data anlaysis.

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

Power BI is a new cloud-based Business Intelligence service provided by Microsoft and derived from its years of experience in relational databases like Access, SQL server etc. It is a business intelligence platform that allows businesses to clean and completely transform data into meaningful data. It thoroughly analyzes data and shares powerful insights.

Below are the reasons on how the Power BI is helping Analyst

Ease of Use : Power BI has very simple and easy to use interface. No programming experience is required to use Power BI. It has inbuilt intelligence which helps you to select attributes for your reports by suggesting the best reporting element. It has a very simple user interface (UI) to connect to the data source. Upon selecting of data source, it allows selection of attributes by a simple drag and drop for your reports.

Easy to Learn : Power BI is developed on the founding platform of Excel and it follows a similar approach to design a report. Data modelling is purely derived on the fundamentals of Microsoft SQL Server and Microsoft ACCESS database. Hence users/programmers can very easily adopt the data modeling of Power BI.

Easy to Collaborate : Power BI comes with easy to collaborate options. The user can collaborate with co-workers to create interactive reports and dashboards in app workspaces. The user can compile dashboards and reports into apps and can publish them to a larger audience. The user can print the report and can export it in the form of PowerPoint Presentation. They can even publish reports and dashboards to public websites where anyone in the world can view and interact with it.

Wide Coverage of Data Sources : Power BI comes with a wide range of connectors for data sources like Microsoft Excel, SQL Server database, MySQL database, Oracle database, IBM DB2 database, IBM Netezza, IBM Informix, PostgreSQL database, Sybase database, SAP Hana, Amazon Redshift, Azure SQL Database, Azure SQL Data warehouse, Azure Analysis services database, Azure Blob Storage, MailChimp, Facebook, GitHub, Salesforce and many more.

3. Explain Descriptive analytics?

Descriptive analytics is the most common and fundamental form of analytics that companies use. Every part of the business can use descriptive analytics to keep tabs on operational performance and monitor trends. Examples of descriptive analytics include KPI (Key Performance Indicator) such as year-on-year percentage sales growth, revenue per customer and the average time customers take to pay bills. The products of descriptive analytics appear in financial statements, other reports, dashboards and presentations.

Companies use descriptive analytics across many parts of the business to evaluate how well they are operating and whether they're on track to attain business goals. Business leaders and financial specialists track common financial metrics produced by descriptive analytics, such as quarterly growth in revenue and expenses. Marketing teams use descriptive analytics to track campaign performance by monitoring metrics like conversion rates and the number of social media followers. Manufacturing groups monitor metrics such as production line throughput and downtime.

The metrics produced by descriptive analytics are used in various ways, including:

Reports: The key financial metrics included in a company's financial statements are generated by descriptive analytics. Other common reports also use descriptive analytics to highlight aspects of business performance.

Visualizations: Displaying metrics in charts and other graphic representations can more efficiently communicate their impact to a wider audience.

Dashboards: Executives, managers and other employees may use dashboards to track progress and manage their daily workload. Dashboards present a selection of KPIs and other important information tailored to the needs of each person. The information may be represented as charts or other visualizations to enable people to absorb it more quickly.

Descriptive analytics helps everyone in the company make more-informed decisions that guide the business in the right direction. It reveals patterns that might otherwise be hidden in raw data, enabling managers to see at a glance how well the business is performing and where improvements may be needed.

Descriptive analytics also helps businesses communicate information among departments and to people outside the company. Potential lenders and investors, for example, may want to scrutinize revenue, profit, cash flow and debt metrics before they'll put money into a business.

4. Explain Predictive analytics?

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 is a form of technology that makes predictions about certain unknowns in the future. It draws on a series of techniques to make these determinations, including Artificial Intelligence (AI), data mining, machine learning, modeling, and statistics. For instance, data mining involves the analysis of large sets of data to detect patterns from it. Text analysis does the same, except for large blocks of text.

Predictive model are used for all kinds of applications, including:

- Weather forecasts
- Creating video games
- Translating voice to text for mobile phone messaging
- Customer service
- Investment portfolio development

All of these applications use descriptive statistical models of existing data to make predictions about future data.

They're also useful for businesses to help them manage inventory, develop marketing strategies, and forecast sales. It also helps businesses survive, especially those in highly competitive industries, such as health care and retail. Investors and financial professionals can draw on this technology to help craft investment portfolios and reduce the potential for risk.

These models determine relationships, patterns, and structures in data that can be used to draw conclusions about how changes in the underlying processes that generate the data will change the results. Predictive models build on these descriptive models and look at past data to determine the likelihood of certain future outcomes, given current conditions or a set of expected future conditions.

5. Explain prescriptive analytics?

Prescriptive analytics focuses on finding the best course of action in a scenario, given the available data. It's related to both descriptive analytics and predictive analytics, but emphasizes actionable insights instead of data monitoring.

Descriptive analytics offers BI insights into what has happened, and predictive analytics focuses on forecasting possible outcomes, prescriptive analytics aims to find the best solution given a variety of choices. Additionally, the field also empowers companies to make decisions based on optimizing the result of future events or risks, and provides a model to study them.

Ultimately, prescriptive analytics helps you make better decisions about what your next course of action should be. This can involve any aspect of your business, such as increasing revenue, reducing customer churn, preventing fraud and increasing efficiency. Here are the key benefits in more detail:

- Make data-driven, not instinct-driven decision : Through advanced Machine Learning Algorithms, perspective analytics recommends a specific course of action based on a wide variety of factors including historical and current performance, available resources, and probability – weighted projection and scenarios. This lowers the chance for human bias or error.

- Simplify Complex Decision : Prescriptive Analysis simulates a variety of scenarios and provides the probability of different outcomes, both immediate to long term. This makes it much easier for you to not only understand the specific recommendation from the tool but also know the probability of a worst case scenario and incorporate that into your plans.

- Focus on execution rather than making decision : The best prescriptive analytics tools first break down data silos to analyze an integrated data set and then provide instant, specific recommendations on your best course of action. This allows you to focus your effort on executing the plan.

6. Write five real-life questions that Power BI has solved.

BI solutions and analytics are particularly important for businesses to make data-driven decisions, allowing them to stay ahead of their competitors and enhancing their customer's satisfaction. Power BI is an ever-growing technology that can have a huge impact on a company's ability to make effective tactical and strategic decisions. It offers game-changing features. This blog will discuss a few challenges the business world faces and how Power BI played its role in overcoming them.

One – Off Reporting is Time Consuming : Gathering a huge amount of data from different sources can be an uphill task. You must rely on different departments to get data, interpret it, and then produce actionable insights. These reports need to be replicated during set intervals. You have to manually regenerate the report from the beginning. This is a challenge faced by many corporations. But as the business grows, waiting for data and then reworking on the reports to get the updated data is not a good approach as it affects your timeline and your productivity. Power BI helps you to access your data instantly with less manual work. It can handle a huge amount of data making it easy to decipher using advanced visualizations. It allows you to get data from different data sources by automatically connecting with them, saving you time and effort. Once a report is created, you only have to hit refresh or enable a schedule refresh to get real-time insights. This will prevent any human error and skewed results.

Finding Specific Data in Large Data Volumes with Power BI: Going through spreadsheets in search of specific datasets is cumbersome. Data is presented in a non-user-friendly way and finding specific data from a vast amount of data can be quite inefficient. Here comes Power BI, providing the users with an easy search of datasets. Once you have imported a dataset in PBI Desktop, you can access that anytime, from anywhere, as many times as you want. For instance, in the Query Editor, you can go to "View" in the header and select the "Go to Column" to navigate to the column you want. And on the main report page and in the data section there is a search right at the top of Fields. With that, you can search and filter all your objects to only those that match. Data can also be shared and published for others to view, so they can also have access to it and take an equal part in the decision-making process.

Data Quality : Everyone wants to use high-quality data for their analysis. Data quality is one of the most important aspects of a data analysis and is often overlooked or treated as an afterthought. Poor quality data can lead to inaccurate analytics and ill-conceived business strategies. If data is not accurate, complete, and clean, companies can make costly mistakes. 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.

Data Security : Data Security is an essential issue for the adoption of any technology. If data is not secured correctly, it can get lost due to system failure, corrupted by a computer virus, deleted or altered by a hacker. This can lead to consequences like financial loss, reputational damage and loss of your customers. Power BI overcomes these issues by leveraging Azure Active Directory for authentication and Power BI login credentials to access the resources.

Foresee Future Trends : Business Trends keep on changing according to the needs, wants, and tastes of the consumer. Prediction of future trends and opportunities is an essential task in business development. It is challenging for businesses to exist and stay relevant if they are not good at identifying and adapting to current trends. That is why spotting trends and showing how they change over time is essential and can help companies make suitable decisions. This gives them an edge and helps them stay ahead of their competition. Power BI helps in monitoring the processes of the company. It can easily spot trends with the help of the data gathered during monitoring. Data Analysis Expressions (DAX) provides a wide range of functionalities for trends analysis. The trending AI Capabilities of Power BI help you visualize the future using predictive analytics and other such big data tools. This can help businesses foresee any need to recruit more employees, change a specific requirement, or further invest in technology.

Conclusion : Power BI is a tool with impressive analytical capabilities and immersive visual dashboards. It helps companies make data-driven decisions and facilitate easy implementation without requiring significant upfront expenses. The benefits of Power BI discussed above are good reasons for companies to consider investing in it and to improve their tactical strategic management processes.