**Power BI DAX** **Project Solution**

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|  | **About Dataset** |
|  | TechnoEdge has several datasets available for analysis, including a Calendar Table, Customers Table, Product Categories Table, Product Sub-Categories Table, Products Table, Returns Table, Territories Table, and Sales Table (covering 2022-2024). The datasets contain information on various aspects of the company's operations, including customer demographics, product information, sales data, and returns. By analyzing these datasets using tools such as DAX Power BI, TechnoEdge can gain valuable insights into its business operations and make informed decisions to improve its performance. |
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| **A** | **Installation** |
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| **Q** | Downloading **Power BI Desktop.** |
| 1 | [Go to https://powerbi.microsoft.com/en-us/desktop/ and select "Power BI Desktop" from the "Products" tab.](https://powerbi.microsoft.com/en-us/desktop/) |
| 2 | Go to the Power BI Desktop download page |
| 3 | Click "Download free" |
| 4 | Select your system version (32-bit or 64-bit) |
| 5 | Click "Download" |
| 6 | Locate the downloaded file in your downloads folder |
| 7 | Double-click to start the installation |
| 8 | Follow on-screen instructions |
| 9 | Launch Power BI Desktop from the desktop shortcut or the Windows Start menu. |
| Instruction**:** | Download and install Power BI Desktop from Instruction: Download and install Power BI Desktop from the official website and start exploring its features for creating impactful reports. |
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|  | **PROJECT TASKS** |
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| **B** | **Data Modeling** |
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| Q | Creating a relationship between tables in Power BI using a common column, it improve the accuracy and reliability of data analysis and visualization in the model view of Power BI? |
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| Hint | Manage Relationships |
| 1 | Product Subcategory Key |
|  | Product\_Subcategories\_Dim VS Product\_categories\_Dim |
| 2 | Product Sub Category |
|  | Product\_Dim VS Product\_Subcategories\_Dim |
|  |  |
| 3 | Product key |
|  | Returns\_Fact VS Products\_Dim |
|  |  |
| 4 | Return date |
|  | Returns\_Fact VS Calender\_Dim |
|  |  |
| 5 | Territory key |
|  | Returns\_Fact VS Territories\_Dim |
|  |  |
| 6 | Customer key |
|  | Sales\_Fact VS Customer\_Dim |
|  |  |
| 7 | Order date |
|  | Sales\_Fact VS Calender\_dim |
|  |  |
| 8 | Product key |
|  | Sales \_Fact VS Product\_Dim |
|  |  |
| 9 | Territory key |
|  | Sales \_Fact VS Territories\_Dim |
|  |  |
|  | (2 fact tables others are dimensions) |
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| **C** | **Data view** |
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| 1 | Display all geographical datasets in Power BI along with their corresponding data categories, such as city, country, state, and region. |
| Hint | To show geographic data with its categories like city, country, state, and region, use Power BI's map visual. It's an easy and effective way to analyze and display geographical information. |
|  | Calculated column |
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| **D** | **DAX Functions** |
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|  | **Date Functions** |
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| Q | Extract the month, year, and quarter from the calendar table in Power BI and use them as filters for an interactive report. |
| DAX Function | Month = FORMAT(Calendar Dim[Date],"mmm")  Year = FORMAT(Calendar Dim[Date],"yyyy")  Yearly Quarter = QUARTER(EDATE(Calendar dim[Date],-3)) |
|  |  |
| Q | Display the start of the month and the start of the year from the calendar table in Power BI using DATE functions. |
| DAX Function | Start of month = STARTOFMONTH(Calendar Dim[Date])  Start of Yr = STARTOFYEAR(calendar Dim[Date]) |
|  |  |
| Q | Using DAX methods, Power BI shows the fiscal year for each date in the calendar table. |
| DAX Function | Fiscal\_Yr = MONTH(EDATE(Calendar\_Dim[Date],-3)) |
|  |  |
| Q | Create a DAX formula using the “DATEADD” function to calculate the revenue for the previous month in Power BI. |
| DAX Function | previous month revenue = CALCULATE([Total Revenue],DATEADD(Calendar\_Dim[Date],-1,MONTH)) |
|  |  |
| Q | Use the “Datediff” function in Power BI to calculate the age of customers based on their birthdate column? |
| DAX Function | Age = DATEDIFF(Customers\_DIM[BirthDate],TODAY(),YEAR) |
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|  | **Text Functions** |
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| Q | Use the CONCATENATE function in Power BI to combine the Prefix, First Name, and Last Name columns into a new column called Full Name for the Customers table. |
| DAX Function | Full Name = Customers\_Dim[Prefix] &" "& Customers\_Dim[First Name] &" "& Customers\_Dim[Last Name] |
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|  | **Logical Functions** |
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| Q | Create a DAX formula using the "IF" Logical function to categorize customers into different age groups, ranging from "41-50" to "91-120". |
| DAX Function | Age Group = IF(Customers\_Dim[Age]<=50,"41-50", |
|  | IF(Customers\_Dim[Age]<=60,"51-60", |
|  | IF(Customers\_Dim[Age]<=70,"61-70", |
|  | IF(Customers\_Dim[Age]<=80,"71-80", |
|  | IF(Customers\_Dim[Age]<=90,"81-90","91-120") |
|  |  |
| Q | Create a DAX formula using the "IF" logical function to categorize the "Income Range" column into low-high and very-high-income groups, then display the results in a new column. |
| DAX Function | income range = IF(Customers\_Dim[AnnualIncome]<=50000,"low income", |
|  | IF(Customers\_Dim[AnnualIncome]<=100000,"average income",IF(Customers\_Dim[AnnualIncome]<=150000,"high income","very high"))) |
|  |  |
|  | **Calculate Functions** |
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| Q | Show the total profit for the years 2022, 2023, and 2024 using the "Calculate" function in Power BI. |
| DAX Function |  |
|  | 2022 = CALCULATE([Total profit],Calendar\_Dim[Year]="2022",YEAR(Calendar\_Dim[Date]=2022)) |
|  |  |
|  | 2023 = CALCULATE([Total profit],Calendar\_Dim[Year]="2023",YEAR(Calendar\_Dim[Date]=2023)) |
|  |  |
|  | 2024 = CALCULATE([Total profit],Calendar\_Dim[Year]="2024",YEAR(Calendar\_Dim[Date]=2024)) |
|  |  |
|  | **Aggregation Functions** |
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| Q | Show the total order value by applying the “sum” aggregation function in Power BI? |
| DAX Function | Total Order = SUM(Sales\_Fact[OrderQuantity]) |
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| Q | Show how many returned products were there in the Returns table by using the “Count “aggregation function in Power BI? |
| DAX Function | Total return No = COUNT(Returns\_Fact[ReturnQuantity]) |
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| Q | Displays the total number of uniQ orders using the” Distinctcount” aggregation function in Power BI? |
| DAX Function | Total order-NO = DISTINCTCOUNT(Sales\_Fact[OrderNumber]) |
|  |  |
| Q | Create a DAX formula that uses the SUMX function to calculate the total revenue |
| DAX Function | Total Revenue = SUMX(Sales\_Fact,Sales\_Fact[OrderQuantity]\*related(Products\_DIM[ProductPrice] )) |
|  |  |
| Q | Use the SUMX function in Power BI to calculate the total cost of products |
| DAX Function | Total Cost = SUMX(Sales\_Fact,Sales\_Fact[OrderQuantity] |
|  | \*related(Products\_Dim[ProductCost]) |
|  |  |
| Q | Use the summarize function to create a table that shows the total profit by country. |
| DAX Function | SUMMARIZE = SUMMARIZE (Territories\_DIM,Territories\_DIM[Country],"Profit",[Total profit]) |
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| Q | Use the subtraction function to calculate the total profit earned after deducting the total expenses from the total revenue. |
| DAX Function | Total profit = [Total Revenue]- [Total Cost] |
|  |  |
| Q | Use the multiply function to calculate the target return |
| DAX Function | Target Return = [Total return No]\*0.90 |
| **E** | **Visual Insights** |
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| Q | Create a KPI (key performance indicator) that shows the total revenue with the start of the month as the trend axis and compares it to the previous month's revenue target. |
| Visual Used | KPI |
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| Q | Create a card visualization that shows the top-selling product, best customer & top product based on a selected TOP N filter. |
| Visual Used | Cards |
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| Q | Create a slicer visualization that allows the user to select a date from the calendar. |
| Visual Used | Slicer |
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| Q | Create a table visualization that shows the profit of each country, allowing me to compare and analyze the performance of different countries. |
| Visual Used | Table Visual |
|  |  |
| Q | Use the clustered bar chart to display the total number of orders placed by each age group?" |
| Visual Used | Clustered bar chart |
|  |  |
| Q | Show how the gauge visual can be used to display the comparison between target and achieved return in the target vs achieved return scenario?" |
| Visual Used | Gauge |
|  |  |
| Q | Use a pie chart to display the total number of orders placed by each income level?" |
| Visual Used | Pie Chart |
|  |  |
| Q | Display the title name of the company using the Text Box?" |
| Visual Used | Text Box |
|  |  |
| Q | Create an animated background for a page using a GIF image?" |
| Image | GIF (Video Image) |
|  |  |
| **F** | **Published Report** |
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| 1 | Power BI reports can be published and shared with others, making it easy to collaborate and work with others on data analysis projects. |
| Hint | Power BI's ability to publish and share reports facilitate seamless collaboration and teamwork in data analysis projects. |
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