DATA VISUALIZATIONS IN TABLEAU

Importance of Data Visualization

1. Enhances the Understanding of Data
2. Provides a Clear and Intuitive way to comprehend the Information
3. **Simplifies Complex data** (Large Datasets and Databases are Overwhelming)
4. **Higher Retention Rate** (Offers a Snapshot of the entire data, making it easier to remember in memory along with being Easily Understandable)
5. **Increases Data Engagement** (Visualizations have a higher Engagement Factor compared to Tabular or Textual Data)
6. Humans are naturally more inclined to process visual information better, which leads to conveying of insights much more effectively.

About

Tableau By Salesforce Helps us with this Visualization using its Interactive Dashboards, Graphically Attractive Displays, and Data Interpretation from Various Sources of Data including Textual Data, Files and Server operated Databases.

Measures are Quantitative Values that have Numeric Data whereas Qualitative Values such as Names and Categories are Called Dimensions in Tableau. Dates are by default considered as Dimensions but can also be treated as Measures if Needed.

Tableau Projects are called Workbooks and within them can contain Sheets (Individual Graphs), Dashboards (Collective Graphs on a Page) and Stories (For Explaining a Concept Step-By-Step). The Workbooks are stored as .twb or .twbx files.

Products & Services

1. **Tableau Desktop**: An Offline Application to Help Create Visualizations From the comfort of your Desktop (Laptop or PC).
2. **Tableau Cloud/Server**: Allows you To Share your Work (Dashboards) with Others via Links as your work is Deployed on the Cloud Servers.
3. **Tableau Prep**: An Offline Service that allows you To Clean, Filter, and Organize your Data Before Proceeding with Visualizations.

4. **Tableau Web**: Basically, Tableau Desktop but, on the Web, doesn't require the hassle of downloading the software and can be accessed remotely on low resource machines as it is connected and compatible to work alongside with your Tableau Desktop. But majorly it is used for Collaboration with Colleagues in a Team or Company, with different Access Levels (Creators, Explorers and Viewers) for different People.

[**Note**: Simpler Cleaning can be Done with Tableau Desktop Itself, but More complex and Detailed ones are better done on Tableau Prep]

Advantages

1. Smooth and Sharable Interactive and Appealing Dashboards.
2. Simple, Easy and Fast Creation Visualizations in a matter of Minutes.
3. Incorporation of Data from a Variety of Data Sources including Static and Live ones, allowing for Real Time Dashboards and Updates to be Visible.
4. Ability to Automatically Interpret, Clean and Organize Data and Later on Generate Analytics including Time Series Predictions, Tend Identification [Up to some Extent only though].
5. Ability To Perform Data Manipulation, and Simple Analytics such as Statistics, Relationships with Just a Click or By Entering a Custom Formula if Needed.

Disadvantages

1. Lack of 3D Visualizations for More Complex Spatial Data Such as AI-based LLM Architectures and ML-based Neural Networks
2. Lack of Design & Styling Option (Complex Features Like Grid and Alignment Not Available)
3. Difficult To Incorporate Images, Videos and Symbols.
4. Lack of Ability to Generate Automatic (Detailed Report with Explanations – How ? What ? Cause ? Reason ? Action ?) and Static (Export to PDF and Other Formats) Reports & Analytics are not Generated To its Best Ability.

Best Use Case

It is Best to Be Used with a Report Software or Service for Analytics such as Power BI from Microsoft, which can be responsible for Generating Reports and Analytics without much efforts, while the Tableau Desktop or Web Software would be responsible for Generating Visualizations and If needed for Data Cleaning and Structuring as well.

Example: Power BI can Identify Anomalies and Patterns Automatically, alongside with using AI to write summaries of Data Obtained, while Tableau offers easier creation and more Interactive Dashboards for Viewing.

Learnings

1. **Tableau Services**: Understood and learnt to work with Various Tableau Services and Products mentioned above.
2. **Data Source:** Importing Data (Static or Live) From various Sources including Files and Servers.
3. **Data Formation**: Cleaning, Formatting, Structuring and Organizing the Dataset with applying Joins, Unions and Relationships within multiple Tables.
4. **Creations**: Creation of Various Visualizations, and making Analysis from them.
5. **Details**: Requirements for creation of Graphs alongside applying Filters, Calculation Formulae and Statistics, Sorts, etcetera to achieve the desired Results.
6. **AI Tools**: Use of Tools such as the Data Interpreter and Summarizers, and Models to obtain even faster results and Outputs.
7. **Presentations**: Creation of Interactive Dashboards and Stories along with Styling (Labels, Details, Colors, ToolTips, Size, Notes, etc.) to suit different Needs.
8. **Saving Work Spaces**: Exporting and Sharing Workbooks and Data through Different Means (Pdfs, .twbx, Links, Deployments, etc.)