Contents

1. Introduction

This project is to learn and implement various visualization techniques available, to perform business intelligence task and enhance it by critically evaluating interpreted output. Developing and demonstrating the skills essential for visualization of complex dataset. Hence to apply this I have decided to use Tableau software as visualization tool and publicly available data from. So, focus is to co-relate various interesting features of data from several companies using visualization techniques. "Numbers have an important story to tell. They rely on you to give them a voice." - Stephen Few. This make it essential to use visualization for gaining business intelligence.

2. Dataset:

Data being the gold rush of 21st century however there are various source from where data can be used publicly. Kaggle being one of the best source for versatile data collection library. Likewise, many companies nowadays provide their annual data for public use, Forbes being renowned magazine publisher focusing on the business, finance, investing and marketing, etc. annually share list of Top 2000 companies worldwide. This data is available on Kaggle scrapped from Forbes.com. https://www.kaggle.com/ash316/forbes-top-2000-companies.

Various interesting variables are present in dataset which are explained below:

VARIABLES	DESCRIPTION	DATA TYPE
Rank	Rank of the company in digits 1-2000	Whole Number
Company	Name of registered companies	String
Country	Name of countries (without it's co-ordinates)	String(Geographic)
Sales	Total sale of companies for corresponding year	Decimal number
Market Values	Market Values in Billion for respective companies	Decimal Number
Profit	Profit earned for specific year	Decimal Number
Assets	Total revenue of the company till date	Decimal Number
Sector	Expertise of the company like Finance, Healthcare, etc.	String
Industry	Specific domain of company like major banks, beverages, etc.	String

Hence this dataset focusses on business domain by providing enormous numbers from which it is difficult to interpret something instantly. Hence various visualization can be presented by accurately using variables against each other and by twerking the data using some features of Tableau.

3. Objective

To identify any correlation or insights hidden within the numeric data. Also, to have clear picture from the dataset about market value, profit, sales, assets, for various sector in different industries which can be useful for companies across the globe to expand their business intelligence. Ultimately providing not just the data but knowledge about business.

4. Donut Chart

4.1 Choice for Visualization Technique:

Donut chart is useful to provide insights of proportion of categorical data, where the size of each piece represents proportion of each included categorical data. Requirement for donut chart: 1.String field which can be categorical data 2.Count in numeric value i.e. features/number/ratio/percentage, etc. Donut chart are used to explain part-to-whole relationship hence having sector as categorical data I would like to show the relationship between sectors along with countries whilst sales as an element of measure

4.1 Creating Donut Chart

Step1: Creating Pie Chart

Under Marks select mark type as Pie.

In that Drag Sector dimension to colour

Drag Sales measure to angle.(Resize the pie chart as desired)

Step2: Switching to dual axis chart

Dragging Number of Rows twice to Rows

Right click both the instance and click on dual axis

Step3: Changing second chart to circle

In mark select second chart as circle and reset the size to which looks like centre of donut.

Drag Sales measure to Text Label

Drag Measure Names to colour

Click colour and set colour as of the background i.e. white for this project

Resize both the chart and drag country and sector as filter to create interactive donut chart and making it less complex.

4.3 Interpretation

Shows sector wise breakdown of sales for each country. With the help of added filters for country and sector it can help in segmenting for the content on which to focus.

5. Descriptive Table

5.1 Choice for Visualization Technique

It is useful for showing relationship or basic information without any fancy graphics. Especially above table shows rankings of various companies along options selected using filter.

5.2 Creating Descriptive table

Taking Company Dimension in row panel.

Taking collection of measure values in which sum of sales, profit, assets, etc. is included.

Adding Measure names to column panel hence being a dimension.

Adding measure names to filter which will help to show variables which are required instead of adding all the variables

Also adding rank feature in filter to display whole table with respect to the ranking of company in ascending order.

5.3 Interpretation

Showing Company and its global ranking, by displaying various other useful data in tabular format which is traditional and common way of interpreting data without and complexity.

6. Combined Map and Pie Chart

6.1 Choice for Visualization Technique

To show geographical features graphically none other than the inbuilt Symbol Map available in Tableau which automatically identifies geographical data type like countries, city, etc. Also, useful not just to show locations but to project measured values like profit, sales by highlighting the specific geographical region. By combing pie chart information provided is more narrowed down as it helps in indicating several other dimensions and measures.

6.2 Creating Map and Pie Chart

Step1: Symbol Map

Taking Longitude measure twice in column panel.

Right click and select as Dual Axis to combine country column for both Pie and Map chart.

Then Drag Country dimension to Details under Marks for Symbol Map.

Drag sum (Sales) to colour for Symbol Map.

Select appropriate colour and resize the map accordingly.

Step2: Combing Pie Chart to Symbol Map

Select as Pie under Marks for second Longitude measure

To display each section of pie with respect to profit drag SUM (Profit) on angle.

Drag sector to colour and add to filter panel.

Add country dimension to details and text label.

Resize the chart for the best fit.

6.3 Interpretation

Highlighting the countries based on the sum of its sales and along with pie chart showing information of profit in individual sector for specific country. Hence combined information of country and its sales in various sector and profit earned is readily understandable from this visualization.

7. Lollipop Chart

7.1 Choice for Visualization Technique

This chart can be good replacement for the normal traditional bar chart as it is more intuitive and graphically more appealing if implemented correctly. This chard can be made with the combination of two chart and arranging it in appropriate way. It can be made using same number of dimensions and measures which are required in bar chart or histogram.

7.2 Creating Lollipop Chart

Step1: Creating two similar charts

Adding Country and Measure Names as Dimension in column panel

Adding Measure Values twice in row column

Selecting Dual axis for both Measure Values in row

Step2: Aligning circle to Bar Graph

Under Marks set any 1 Measures Value as Circle and other as Bar.

Drag Measures Name on colour for both Measure Values chart this will give separate colour for Assets and Market Value

Resize the Circle and Bar accordingly.

Add Country and Measure name to filter hence making it less complex by interpreting on selected options.

7.3 Interpretation

It shows combined result as union of countries and companies in that countries which helps in comparing the assets and market value with less complexity by focusing on desired insight.

8. Stacked Histogram

8.1 Choice of Visualization Technique

Stacked column chart are great to interpret parts of multiple totals which are associated to single entity. When number of segmentation is minimal and legends are few enough for less complexity. Also useful in showing some pattern between linked variables which show similar growth rate.

8.2 Creating Stacked Histogram

Drag sector dimension in columns panel.

Drag Measure Values in rows panel and select values to be displayed.

Under Marks set as Bar.

Drag Measure Values on colours and set appropriate colour.

8.3 Interpretation

Shows correlation between Profits, Sales and Market Values for each sector and by arranging columns in ascending order shows that Financials sectors has maximum growth and all the three entities grow simultaneously

Conclusion

Hence by fulfilling the objective of analysis it is observed that USA has highest sum of sales in which Financials and Consumer Discretionary contributing maximum. Also it is easy to know identify which sector is dominant in specific country by using Donut chart. Ranking filter in text Table is useful to identify the goodwill of company by search its global rank along with sales and profit. Hence valuation of each company with respect to assets and market value in its own country can be compared using lollipop chart by using filters linked together. Finally showing that Financials sector is the major contributor followed by Consumer Discretionary. This trends and insights would have been difficult to identify without the help of visualization.

Challenges

- Had to gain basic knowledge for Business Domain, terminologies, relationship between assets and profit of company, etc.
- Also had to learn how to implement graphs and charts which are not readily available on tableau just by single click.
- Need to understand some of the basics of graphical illustration of thing like which share/colour to use, what symbols to use so that visualization says neutral and appropriate socially.
- Fulfil minimum requirements of Dimensions and measures for each chart which were not readily available in Tableau. So, needed to twerk the chart and choice of chart accordingly.
- As the data was taken from public domain had to research for the authenticity of the data and weather the downloaded file is safe to access and transport to other system.

References:

https://kb.tableau.com/articles/issue/creating-donut-charts