Power BI Animation visual

Objective

This chapter

- Understanding scatter Plot chart.
- Use and implementation of Clustering.
- Play axis and the parameters.
- Defining data type and changing data parameters.

Scatter Plot chart

- A scatter chart is a diagram that displays the relation between two numeric variables for a set of values.
- Typically, a scatter chart plots data points for a set of values for two variables using Cartesian coordinates.
- They allow you to compare data points on two axes at the same time far more easily than you can in a line or column chart.
- The scatter chart in Power BI is the only default visualisation that you can use to create animations.

Creating A Scatter Chart

Let's start simple and create a scatter chart that shows the relationship between sales and profit.

From the Visualizations pane, select "**Scatter chart**". It is the icon that shows five dots on a chart.
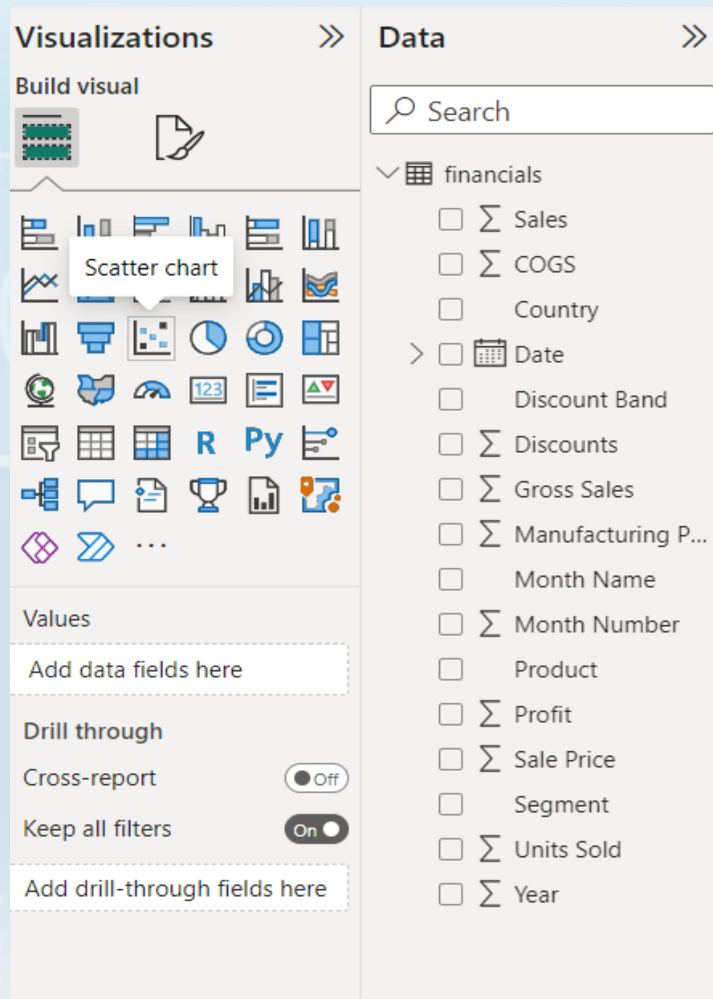
Next, you need to specify column values for the "X-Axis" and "Y-Axis" fields. Drag "**Sales**" and "**Profit**" columns from the "**Field**s" pane and drop them in the "**X-axis**" and "**Y-Axis**" fields, respectively.
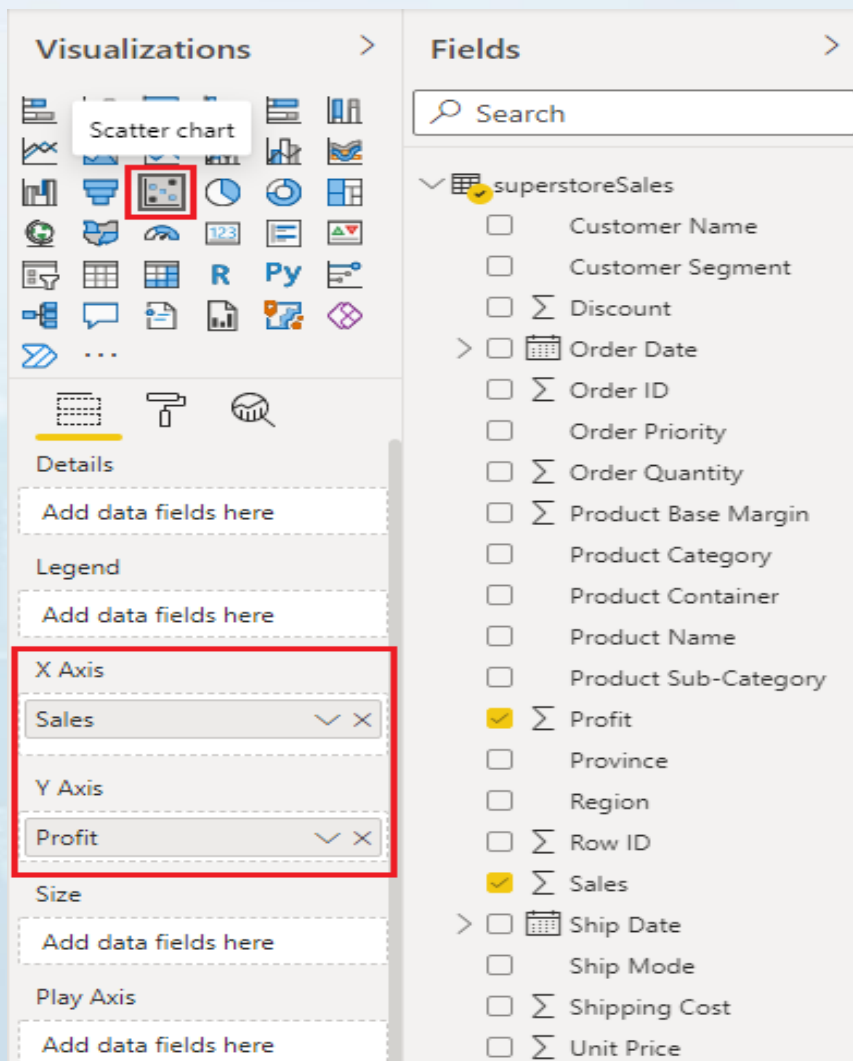
- By default, you will see only a single data point, the sums of the two datasets.
- If you hover your mouse over the data point, you will see the values shown.
- A scatter chart with one data point doesn't tell you much.

Sales and Profit

Sales	14,915,600.82
Profit	1,521,767.98
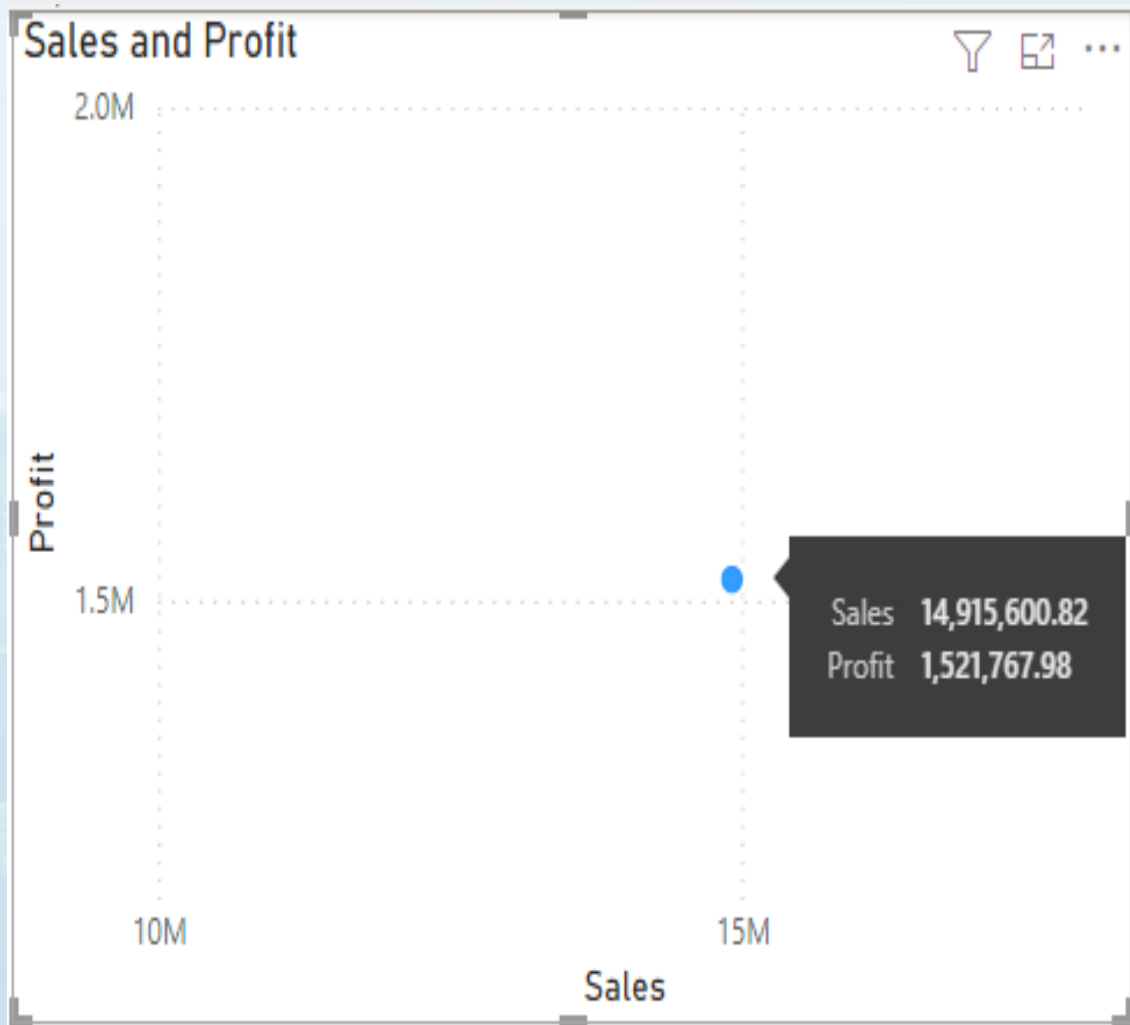
In the reports view, Power BI Desktop will create the following scatter chart.

It would be better if you could see sales and profits grouped by categories of products.

- To do so, drag the "**Product-Sub-Category**" column from the "**Fields**" pane and drop it to the "**Details**" field.
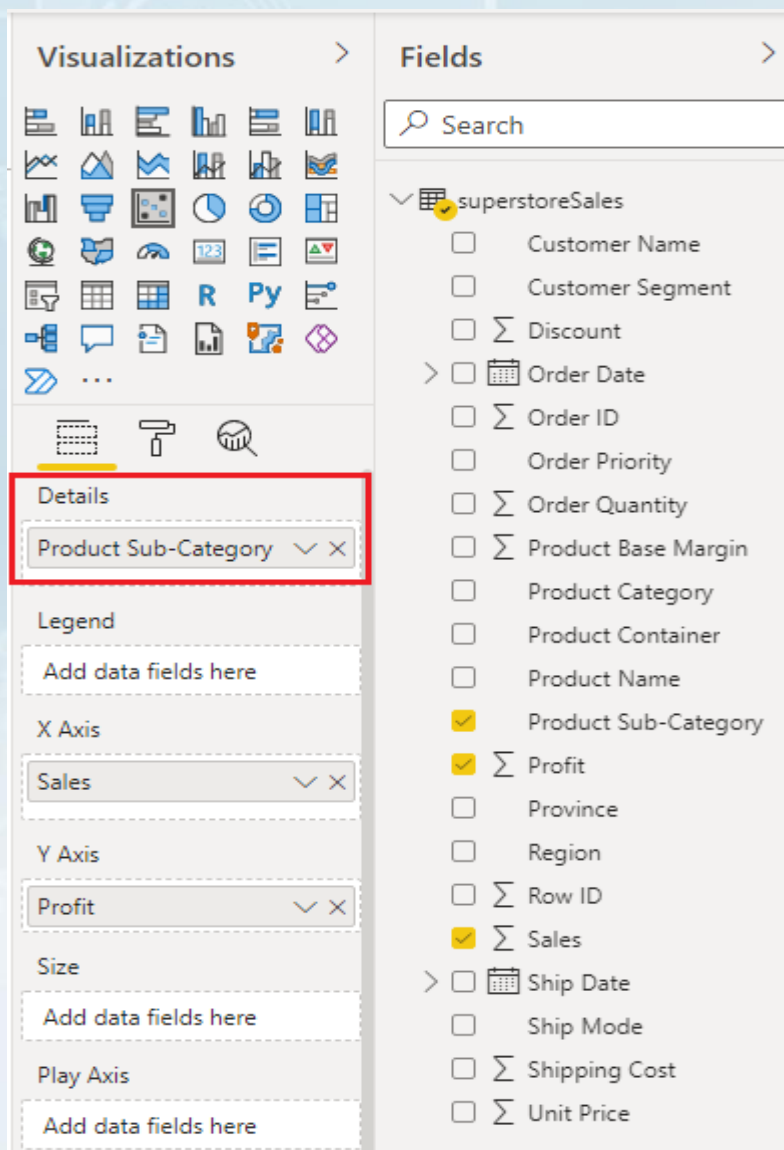
If you hover over any data point, you will see the sub-category name.

- To see the category name for the products with high sales and high profits, you can hover over the data points near the top-right corner of your scatter chart, as we have done with office machines above.

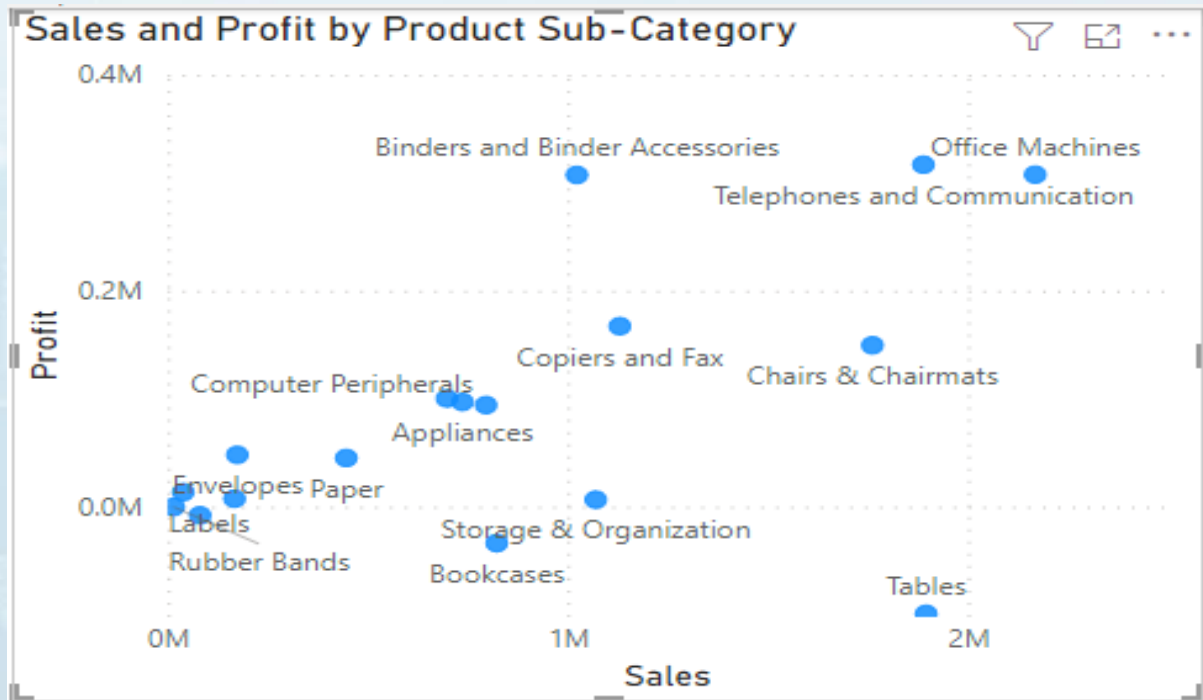Your scatter chart will now look like this:
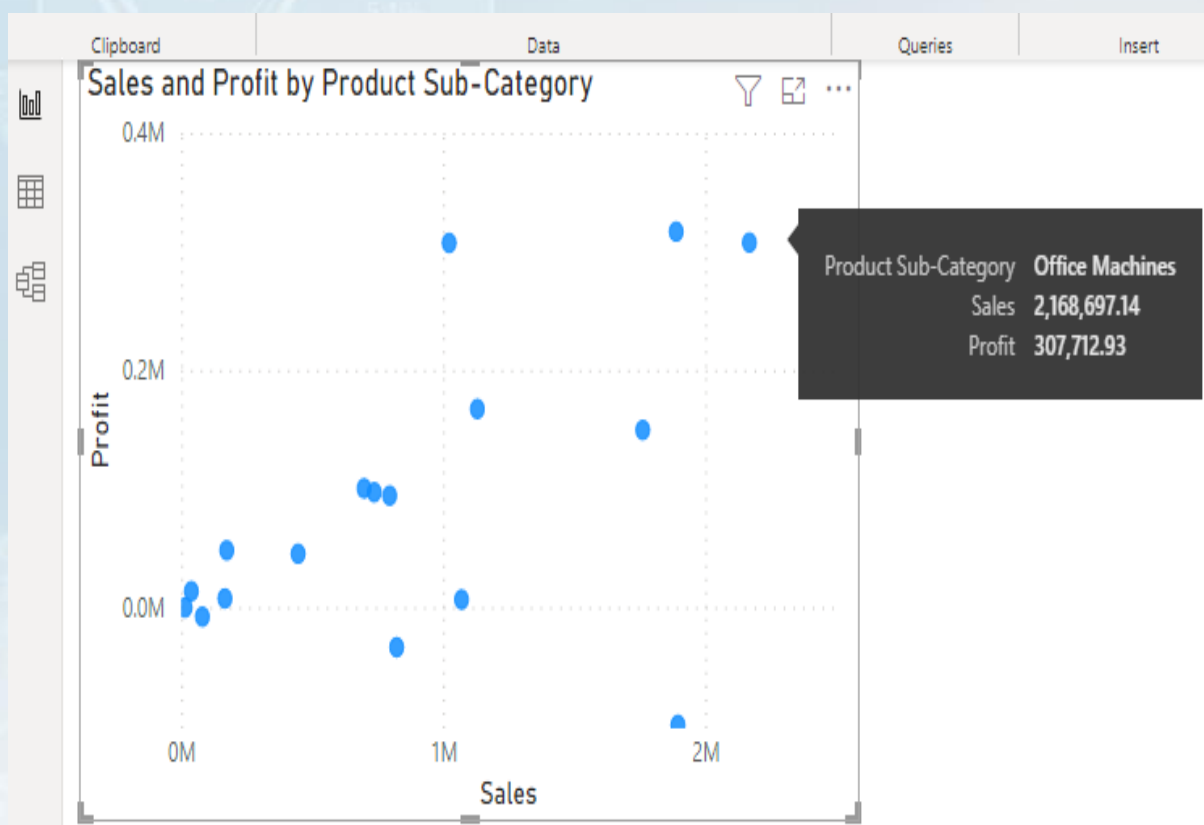
Labelling Data Points

To display category names along with data points, go to the "**Format**" option (paint roller icon) in your scatter chart and then drag the value for the "**Category labels**" option to "**On**".
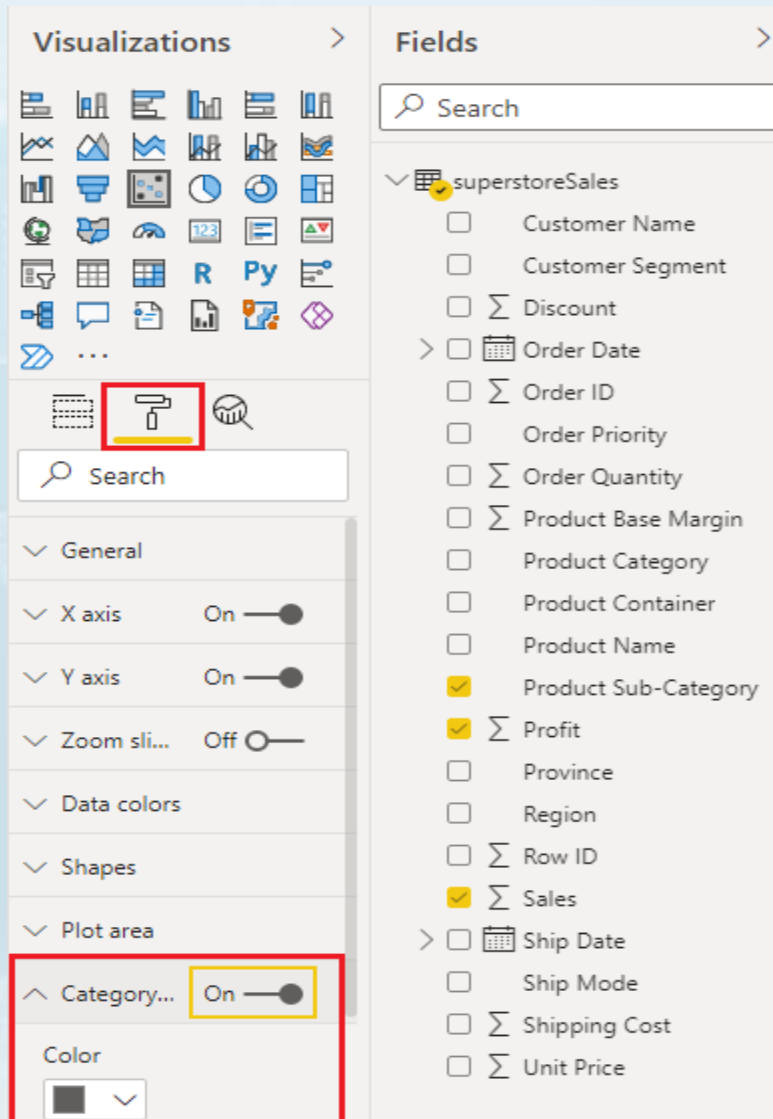
In the output below, you can see the names of your sub-categories along with data points.

Changing the Size of Data Points

By default, the scatter chart in Power BI displays all the data points with equal size.

You can plot data points with variable sizes by assigning them weights.
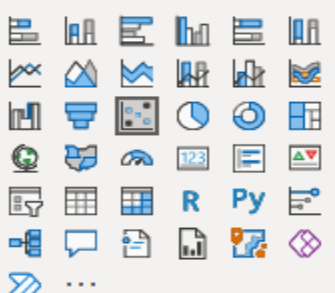
You can produce scatter charts where the size of a data point (or bubble) it relates to. In our example, this would be the volume of sales for all the products in each category.

- To do this, you need to add the "**Order Quantity**" column from the "**Fields**" pane to the "**Size**" field.
- You also add the "**Product Categor**y" column to the "**Legend" field**".

These changes will adjust the colour of the data points depending on their primary product category.

Adding Animations with Play

The Power BI scatter chart is the only default chart that can be used to plot animations in Power BI.

Something that's difficult to do in SSRS and Google Data Studio.

To do so, you need temporal or time-series data, e.g., year, dates, months, etc.

Let's create an animation that changes the position of data points on a scatter chart based on yearly information.

Select the "**Year**" values from the "**Order Date**" date hierarchy and drop them on the "**Play Axis**" field.
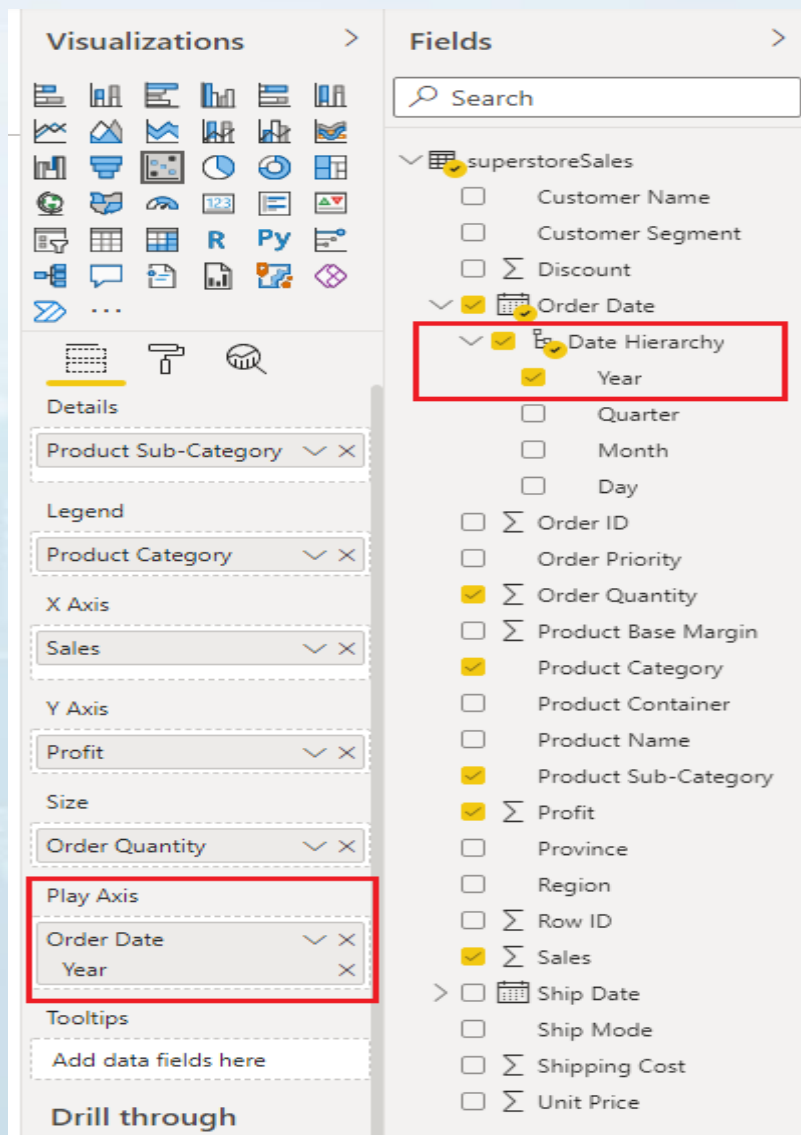
- You will now see a play option on your scatter chart and a bar showing progress across the bottom of your chart.
- If you click the play button (the triangle), you will see that the data point positions and sizes will change with the year.
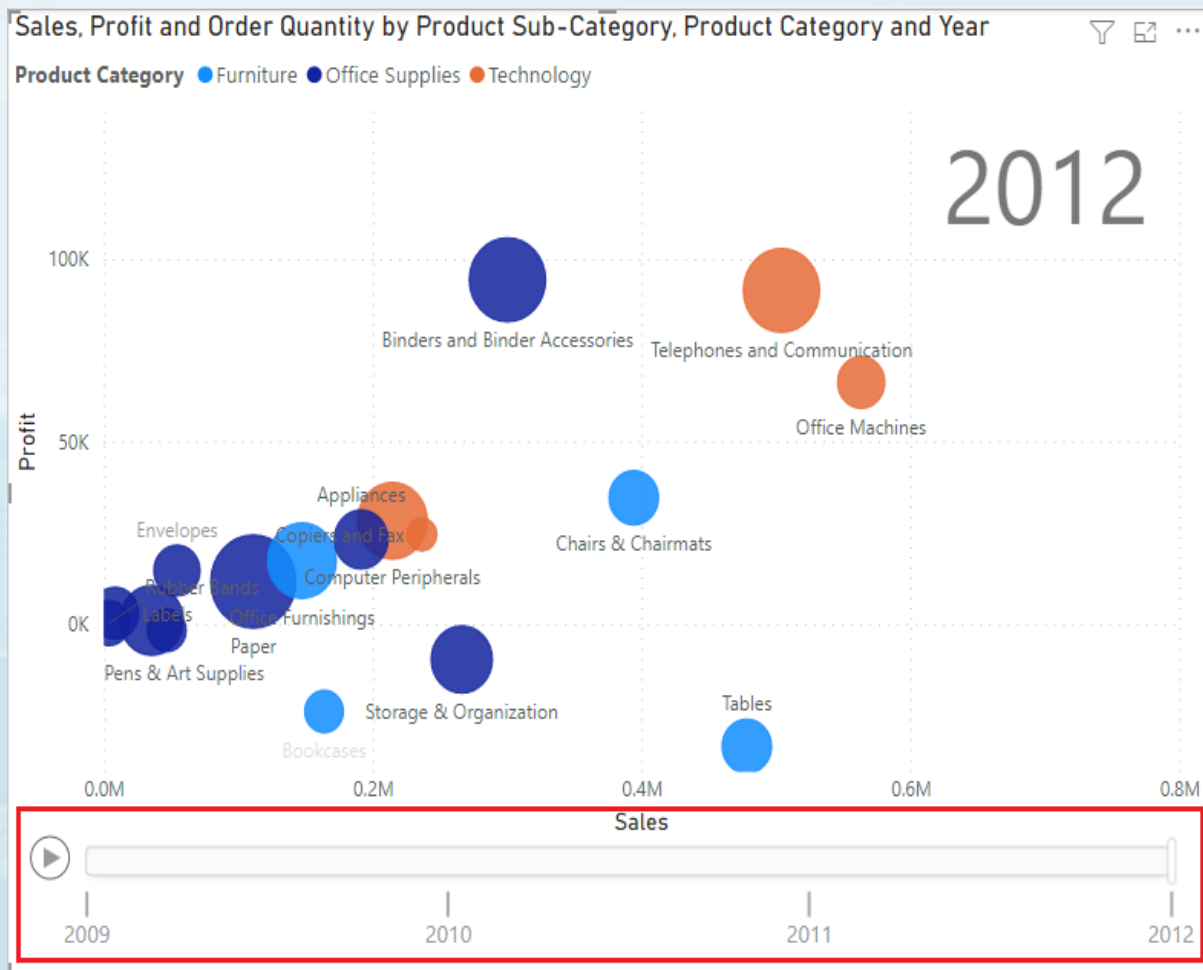
We can also trace a trend in your animation.

- Once your animation has finished playing, if you click on any data point, you will be able to see its trend over the years, where a line and differing size bubbles trace how the data for that point has changed over time.

Sales, Profit and Order Quantity by Product Sub-Category, Product Category and Year

Product Category ● Furniture ● Office Supplies ● Technology

Product Sub-Category	Office Machines
Product Category	Technology
Sales	732,505.45
Profit	60,494.52
Order Quantity	2122
Year	2009
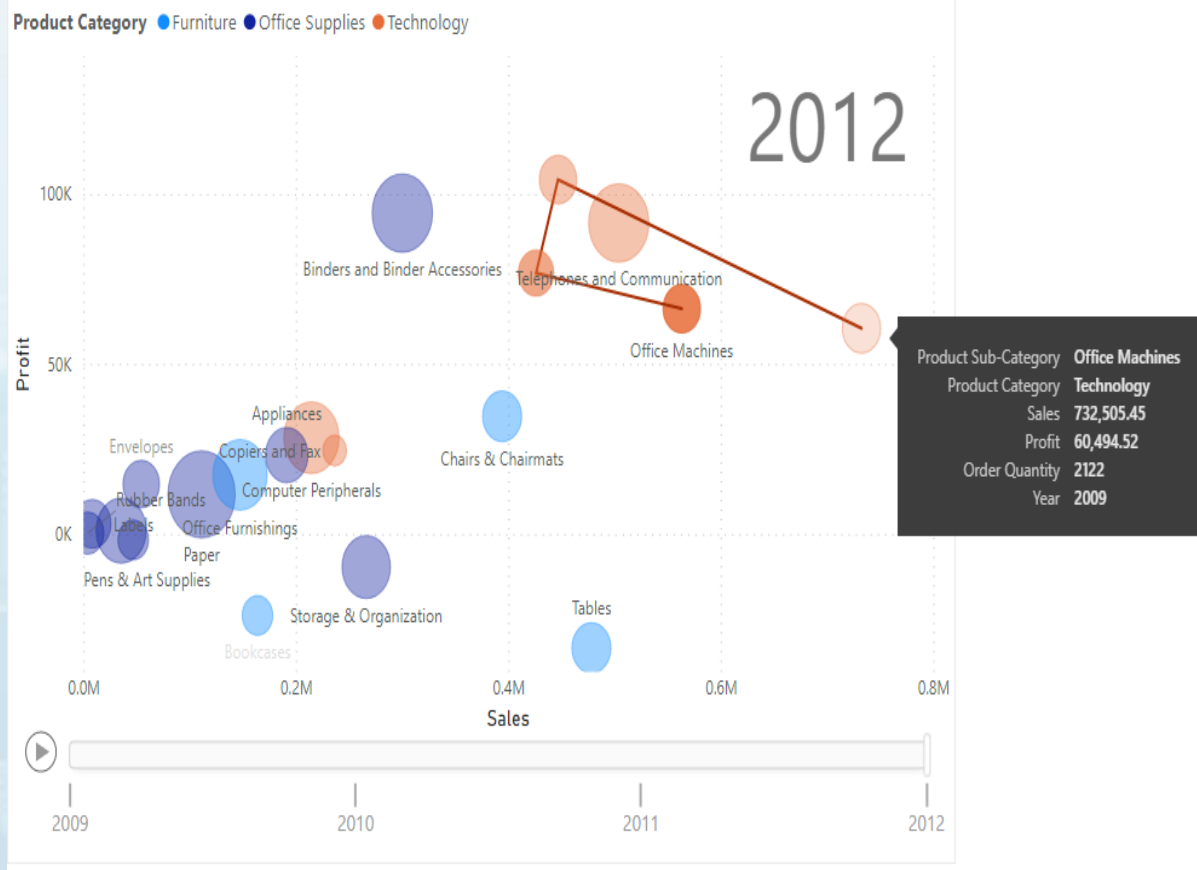
Power BI Animation visual and Scatter Plot chart

Sales, Profit and Sales by Sub-Category, Category and Year

Category ● Furniture ● Office Supplies ● Technology

Key Points

A scatter plot chart in Power BI is a graphical representation of data points that helps you identify relationships and patterns between two numeric variables. The chart displays the values of two measures as a set of points on a two-dimensional plane. Each point on the scatter plot represents the intersection of the two measures.

To create a scatter plot chart in Power BI, you need to follow these steps:

1. Open Power BI Desktop and load the data you want to visualize.
2. Click on the "Visualizations" tab on the right-hand side of the screen.
3. Select "Scatter chart" from the available chart types.
4. Drag and drop the two measures you want to compare into the "Values" section of the chart.
5. Customize the chart as per your requirement. You can change the chart type, add data labels, add trend lines, etc.
6. Once you have created the scatter plot chart, you can analyse the data points on the chart to identify patterns and relationships between the two measures. The scatter plot chart also allows you to highlight specific data points, zoom in on certain areas of the chart, and interact with the chart to explore the data in more detail.

Some key things to keep in mind when working with scatter plot charts in Power BI are:

- Ensure that the two measures you are comparing are both numeric.
- Use a meaningful X and Y axis labels to help users understand the data.
- Consider adding a trend line or data labels to make the chart more informative.
- Use colours or shapes to differentiate between different categories or groups in the data if needed.
- By following these tips and best practices, you can create informative and meaningful scatter plot charts in Power BI to help you analyse your data.

Use and Implementation of Clustering in Power BI

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Clustering is a powerful technique used in data analysis to group similar data points together based on their characteristics. In Power BI, clustering is used to create a new column in a dataset that groups similar data points based on their similarities. Clustering is used to identify patterns and relationships within large datasets that would be difficult to identify otherwise.

Here are some common ways to use and implement clustering in Power BI:

1. **Data Exploration**: Clustering can be used to explore and understand a large dataset. By identifying groups of similar data points, you can quickly identify patterns and relationships within the data.
2. **Customer Segmentation**: Clustering can be used to segment customers into different groups based on their purchase history, demographics, or other characteristics. This information can then be used to create targeted marketing campaigns or improve customer experience.
3. **Anomaly Detection:** Clustering can also be used to identify anomalies in a dataset. By identifying data points that do not belong to any cluster, you can identify potential errors or outliers in the data.

To implement clustering in Power BI, follow these steps:

1. Open Power BI Desktop and connect to your data source.
2. Open the data model view and select the table or dataset that you want to cluster.
3. From the Modelling tab, select "New Column" and choose "Clustered Column".
4. Select the input column(s) for the clustering algorithm and specify the number of clusters you want to create.
5. Choose the clustering algorithm to use, such as K-means, Hierarchical, or DBSCAN.
6. Review the output and adjust the clustering parameters as needed.
7. Use the clustered column in visualizations and analysis to explore the clustered data.

By following these steps, you can implement clustering in Power BI to gain insights into your data and improve your analysis.

Play Axis and the Parameters in Power BI

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In Power BI, the Play Axis is a visual element that allows you to create an animated chart that shows changes in data over time. The Play Axis is a dynamic visual element that can be added to certain chart types, such as line charts, column charts, and scatter plots, and it can be used to visualize how the data changes over time.

To use the Play Axis in Power BI, you need to have a date or time-based field in your dataset that represents the time dimension. Once you have a suitable time-based field, follow these steps:

1. Create a chart with the time-based field on the X-axis and the measure(s) you want to visualize on the Y-axis.
2. From the "Visualizations" pane, select the "Play Axis" visual and drag it onto the canvas.
3. Drag the time-based field onto the "Play Axis" visual.
4. Customize the Play Axis settings, such as the animation speed, the start and end dates, and the format of the time-based field.

Once you have added the Play Axis to your chart, you can use the play button to animate the chart and show changes over time. You can also use the slider to move the animation forward or backward in time.

In addition to the Play Axis, Power BI also allows you to use parameters to make your reports and dashboards more interactive. Parameters are user-defined input values that can be used to filter, sort, or group data in a report. Parameters can be used in various Power BI components, such as filters, visuals, and queries.

To create a parameter in Power BI, follow these steps:

1. Open the "Modelling" tab and click on "New Parameter".
2. Enter a name and data type for the parameter, such as "Sales Year" and "Whole Number".
3. Specify the allowable values for the parameter, such as a range of years or a list of categories.
4. Use the parameter in visuals, filters, or queries by referencing the parameter name in the corresponding fields or expressions.

By using parameters, you can make your reports and dashboards more interactive and allow users to customize their views of the data.

Defining data type and changing data parameters Power BI

In Power BI, data types define the kind of data that is stored in a column of a table. The data type of a column determines how the data is stored and how it can be used in calculations and visualizations. It is important to define the correct data type for each column in a table to ensure that the data is accurate and can be properly analyzed.

To define the data type of a column in Power BI, follow these steps:

1. Open the "Fields" pane and select the table containing the column.
2. Right-click on the column and select "Data Type".
3. Choose the appropriate data type from the list, such as Text, Whole Number, Decimal Number, Date/Time, or Boolean.
4. If necessary, specify the formatting options for the data type, such as number of decimal places or date format.

Once you have defined the data type of a column, you can use it in calculations and visualizations. You can also change the data type of a column by following the same steps and choosing a different data type.

In addition to defining the data type, you can also change the data parameters for a column in Power BI. Data parameters are used to filter or transform the data in a column to make it more usable in calculations and visualizations.

To change the data parameters for a column in Power BI, follow these steps:

1. Open the "Fields" pane and select the table containing the column.
2. Right-click on the column and select "Transform Data".
3. Use the Power Query Editor to apply data transformations to the column, such as filtering, sorting, or aggregating the data.
4. Click "Close & Apply" to save the changes and return to the report view.

By changing the data parameters for a column, you can ensure that the data is accurate and can be properly analyzed in calculations and visualizations.