SALES ANALYSIS REPORT
USING POWER BI

Submitted by

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IN

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

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1.Introduction:

With the changeable business circumstances, the significance of Business Intelligence has gained lots of deliberation. Business Intelligence tools can provide the standardization with a fast and persuasive decision making process based on the multiple data sources, which might be able to affect the survival of the organization on the market.Microsoft Power BI is used to find insights within an organization's data. Power BI can help connect disparate data sets, transform and clean the data into a data model and create charts or graphs to provide visuals of the data.

2. Procedure of Analysis:

This sales analysis dashboard can be done in four different Steps. They are,

1. Data Gathering / Requirement :
2. Data Modelling
3. DAX calculations
4. Creating Dashboards

3.Data Gathering / Requirement:

In this step, I have collected data from different sources Assembled a sales reports with different visuals to best show the Sales Insights in one page Dashboard.The tables that I have used are listed below.

PREVIEW OF THE DATASET:

1. Different years of Sales (Excel)

fSalesPrimaryKey	ProductID	SalesRepID	Date	Units	PercentOfStandardCost	RevenueDiscount	Geokey	Total Revenue	Total cost	Gross Profit
46	7	5	03 January 2014	108	0.962	0.55		2,910.60	891	2019.6
99	7	5	04 January 2014	103	0.954	0.55		2,775.85	849.75	1926.1
146	7	5	07 January 2014	135	0.942	0.55		3,638.25	1113.75	2524.5
197	7	5	08 January 2014	115	0.948	0.55		3,099.25	948.75	2150.5
283	7	5	10 January 2014	131	0.953	0.55		3,530.45	1080.75	2449.7
447	7	5	14 January 2014	124	0.95	0.55		3,341.80	1023	2318.8
449	7	5	14 January 2014	121	0.95	0.55		3,260.95	998.25	2262.7
450	7	5	14 January 2014	115	0.95	0.55		3,099.25	948.75	2150.5
555	7	5	16 January 2014	104	0.952	0.55		2,802.80	858	1944.8
642	7	5	21 January 2014	108	0.954	0.55		2,910.60	891	2019.6

2. Categories (Excel)

CategoryKey	Category
1	Special
2	General

3. Geography (Excel)

Country	Town	Wikipedia	GeoKey
Czech republic	Prague	https://en.wikipedia.org/wiki/Prague	1
Denmark	Copenhagen	https://en.wikipedia.org/wiki/Copenhagen	2
Germany	Frankfurt	https://en.wikipedia.org/wiki/Frankfurt	3
Germany	Berlin	https://en.wikipedia.org/wiki/Berlin	4
Germany	Dresden	https://en.wikipedia.org/wiki/Dresden	5
Czech republic	Brno	https://en.wikipedia.org/wiki/Brno	6
Czech republic	Ostrava	https://en.wikipedia.org/wiki/Ostrava	7

4.Product (CSV)

ProductID	Sub Category Key	Color	ProductName	RetailPrice	StandardCost
1	3	Red	Alder	23.95	7.55
2	2	Blue	Linder	23.95	7.55
3	2	Green	Magnum	23.95	7.55
4	1	Red	Quad	43.95	13.75
5	1	Blue	Black Monk	43.95	13.75
6	4	Green	Quad	43.95	13.75

5.Sales Rep (Excel)

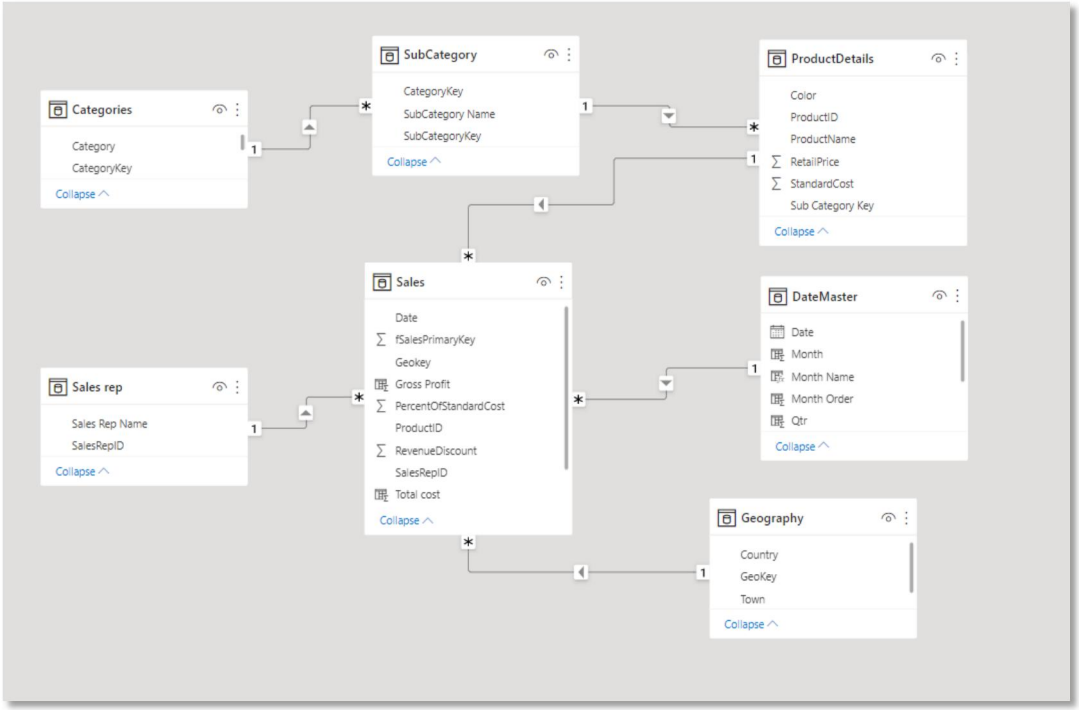
SalesRepID	Sales Rep Name
6	Jan Novotny
7	John White
5	Ellen Woody
3	Mark Spancer

6. Sub Categories (Excel)

SubCategoryKey	CategoryKey	SubCategory Name
1	1	Extra
2	2	Regular
3	1	Micro
4	2	Super

4.Data Modelling

Here the respective transformations to the Sales fact table in order to split the Country form the City in field “Location” is done and changed the data type of Geo Key. Created a unique Geo key in sales and geography table.The data has to be transformed and cleaned.Finally after cleaning the data, it should be modeled.The Data Model connecting all tables and using the Calendar table should be set up in the Power BI file.



5.DAX Calculations

- The total Revenue in Sales table is created , using the Product's Retail Price, and multiplying it by the Units.
- The total Cost in Sales table, using the Product's Standard Cost, and multiplying it by the Units.
- The Gross Profit in Sales is created using the formula: Total Revenue – Total Cost
- The Gross profit MoM growth Change% measure that could benefit us in decision making.
- The Total Revenue QoQ growth Change% measure that could benefit us in decision making.
- The measure for AVG sales per day – this is the average sum of Total Revenue per day based on the Dates of actual Sales.

5. Dashboards:

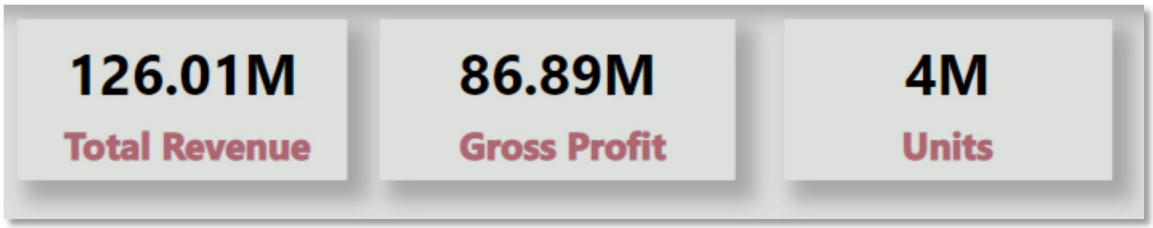
7.Summary of Dashboards:

The Dashboards represent the sales based on different kinds of Products and categories.From this we can use the cards like Total Revenue , Gross profit and Units. The filters like country , year and different kinds of month.The pie chart gives the total revenue by Sub category name .The Donut chart infers the Total revenue by category of the Product. Here I used the scroller of Total Revenue by product name and converted the values of the Decimal number .The bar chart shows that total Revenue by Product name and Subcategory Name .The waterfall chart gives the total

Revenue by year and Product Name.The two line chart infer the QoQ growth and MoM growth from Total Revenue and Gross Profit.The table gives the Date by Average of Total Revenue. Here I used the icons from increase and decrease of the average revenue.

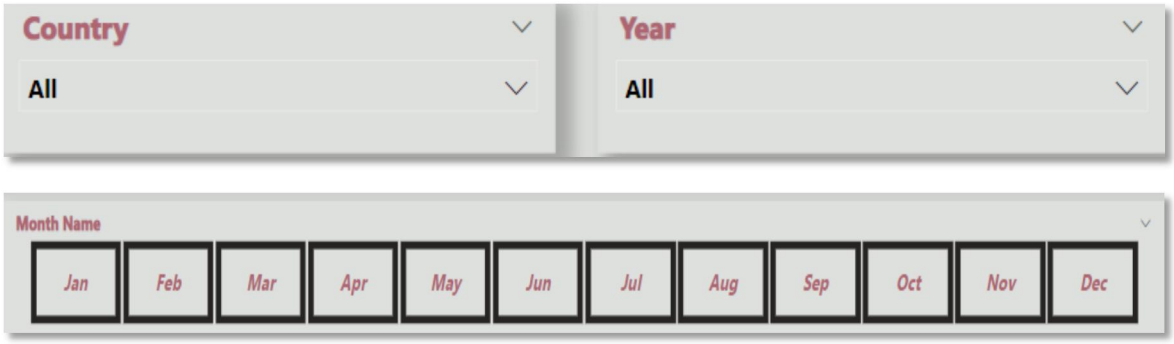
8. Visualization Techniques:

8.1 Cards:



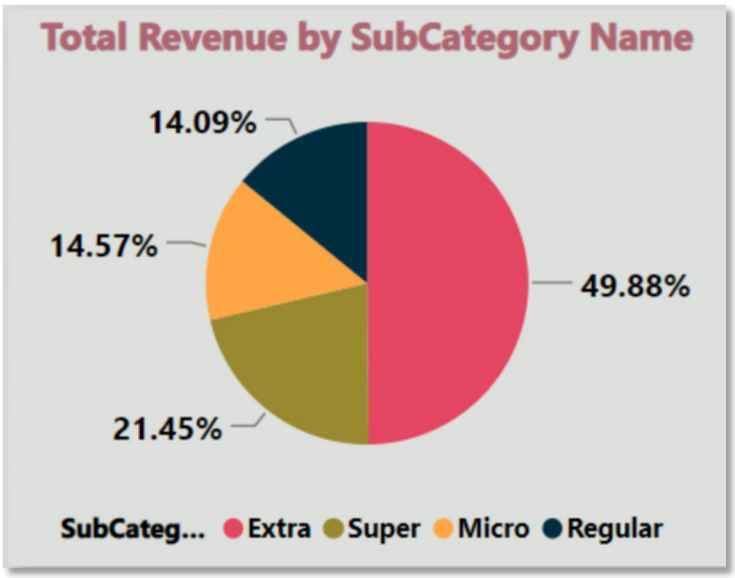
- Cards are a type of visual in Power BI, used to display a single value or metric in a compact and easy-to-read format. They are often used to provide a quick snapshot of an important piece of data, such as the total revenue for a particular period, the Gross Profit and the units.
- Cards are a useful visual to use when you need to display a single data point, and want to create a dashboard that is clear, concise, and easy to read. By using cards in Power BI, you can quickly get a high-level view of key metrics and KPIs, and quickly identify areas that need attention.

8.2 Slicers:



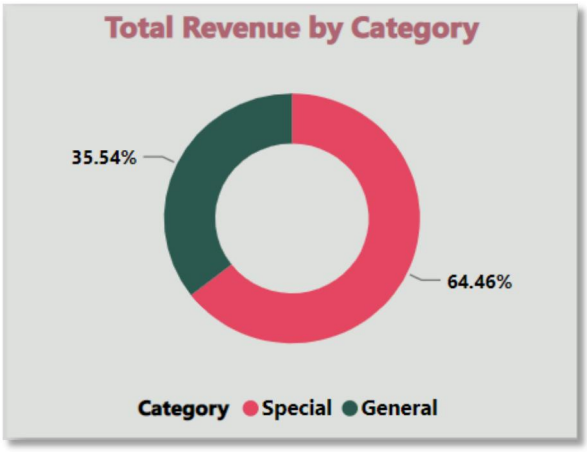
- In Power BI, slicers are used to limit the data that is displayed in a report or dashboard. By applying slicers, you can focus on specific data points or categories and exclude the rest. Slicers can be based on different criteria, such as specific values, date ranges, or conditions, and can be applied to one or more visuals in a report or dashboard.Here I used three slicers in dashboards.

8.3 Pie chart:



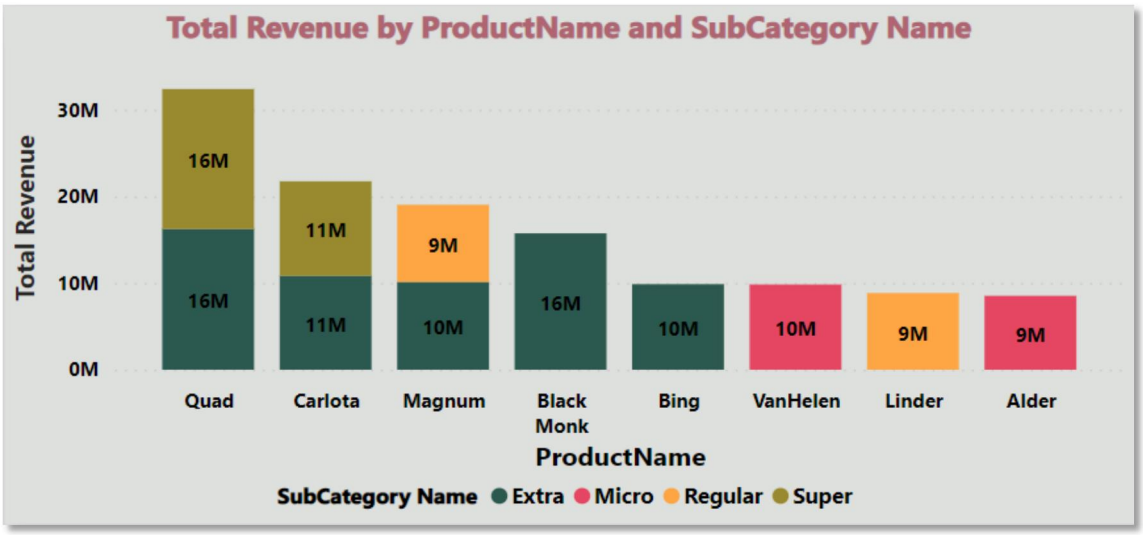
- A pie chart is a type of data visualization that is used to represent the proportions and percentages. It consists of a circular graph that is divided into sectors, with each sector representing a different category or data point. The size of each sector is proportional to the percentage of the total data it represents.
- Pie charts are often used to represent data that can be divided into categories, such as the total revenue by subcategory name .

8.4 Donut chart:



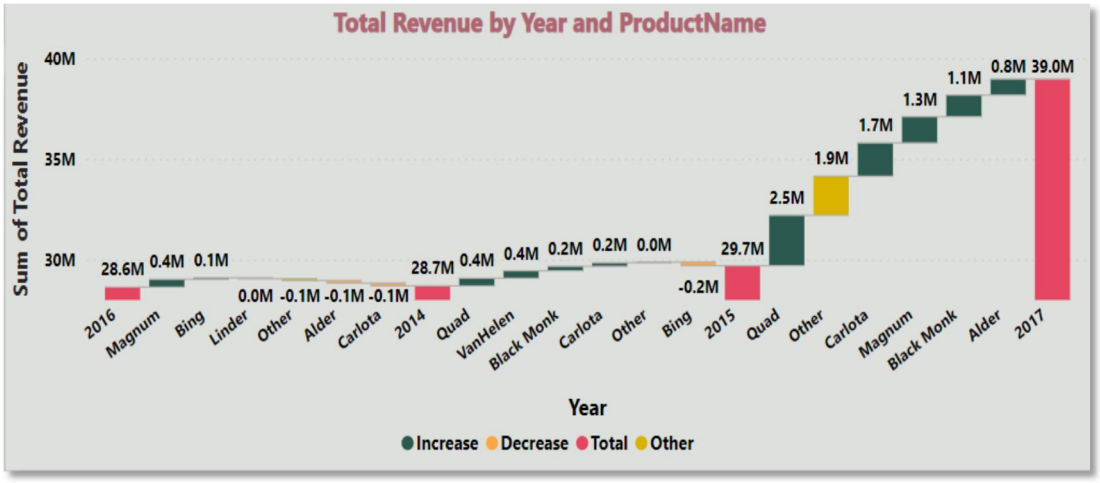
- A donut chart is a variation of a pie chart, with a hole in the center. It is used to represent the same type of data as a pie chart, and serves the same purpose of showing the proportions and percentages of different categories. The difference is that the hole in the center of the donut chart provides more space for labeling and displaying additional information.
- In Donut charts the total revenue by category is based on the two categories.The larger area in the center of the donut chart can be used to display additional information, such as the total data or the sum of the categories.

8.5 Bar chart:



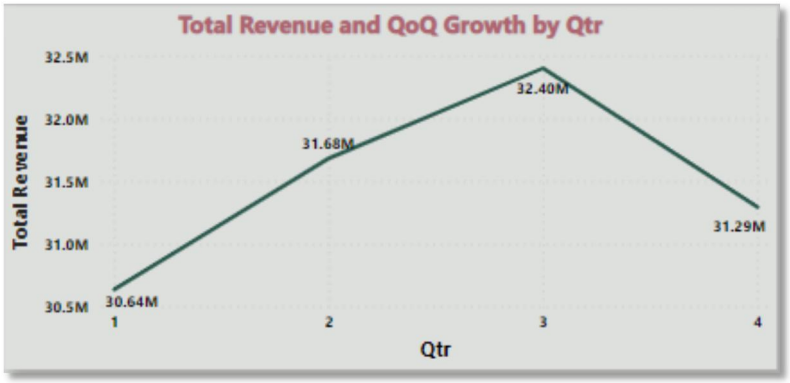
- A bar chart is a type of data visualization that is used to compare the size of different data points. It consists of a series of rectangles, or bars, with each bar representing a different category or data point. The height or length of each bar is proportional to the size of the data it represents.
- The bar chart represents the total revenue by product name and sub category name from that we can infer that how the sales has been done for different products.

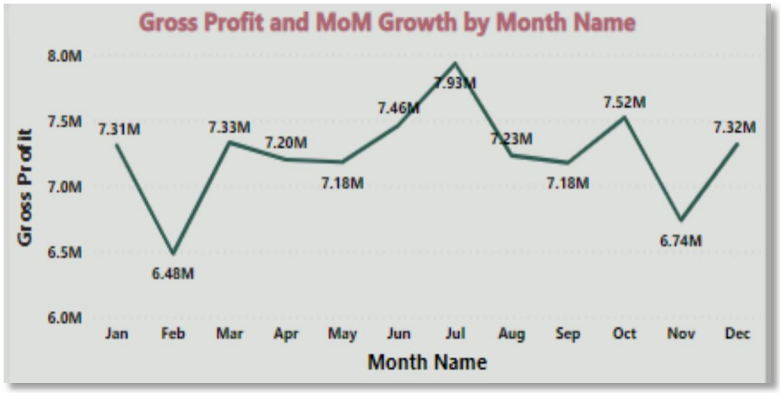
8.6 Waterfall chart:



- A waterfall chart is a type of data visualization that is used to show how an initial value changes over time, or how different categories contribute to a total value. It consists of a series of rectangles, or bars, with each bar representing a change in the value. The height of the bars shows the magnitude of the change, and the direction of the bars shows whether the change is positive (an increase) or negative (a decrease).
- Here In waterfall chart the total Revenue by year and product name which gives the insights of revenue based on the product and year.

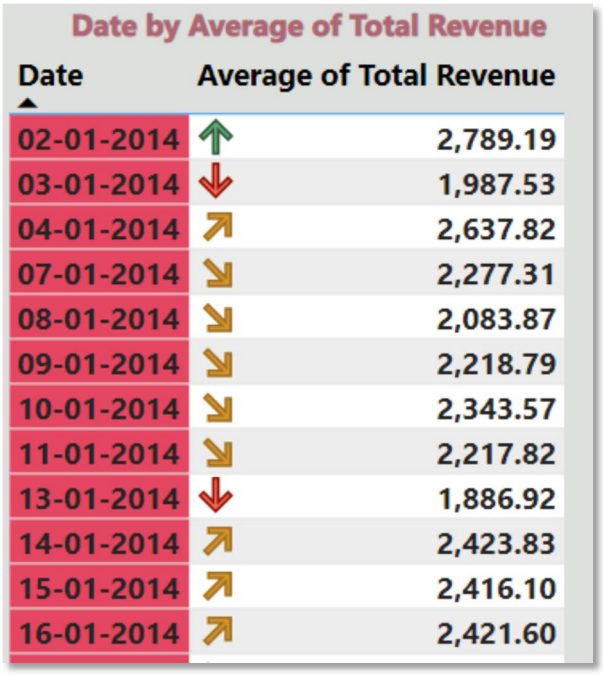
8.7 Line charts:





- A line chart is a type of data visualization that is used to show how a value changes over time or along a continuous scale. It consists of a series of points connected by straight lines, with each point representing a different data value. The position of each point on the chart is determined by the value of the data and the scale of the chart.
- A line chart shows the trends over the period of time .This chart depicts the total revenue by quarter and gross profit by Month name.

8.8 Table:



Date by Average of Total Revenue

Date	Average of Total Revenue
02-01-2014	2,789.19
03-01-2014	1,987.53
04-01-2014	2,637.82
07-01-2014	2,277.31
08-01-2014	2,083.87
09-01-2014	2,218.79
10-01-2014	2,343.57
11-01-2014	2,217.82
13-01-2014	1,886.92
14-01-2014	2,423.83
15-01-2014	2,416.10
16-01-2014	2,421.60

- A table in Power BI is a type of data visualization that displays data in a grid format, with rows and columns. Each row represents a different data point, and each column represents a different attribute or category. The data in a table can be sorted, filtered, and grouped to help you analyze and understand the data. The Date and Average of Total revenue is calculated with icons.

9.Conclusion:

- In conclusion, dashboards are powerful tools for data visualization and analysis. They allow you to see and understand large amounts of data in a clear and organized way, and to explore and analyze the data in real-time. Dashboards can be customized to suit your needs, with a variety of visuals and filters available, and can be used to support business decision-making and performance management
- The sales dashboard gives the insights of how the sales ,cost,performance of total sales has occurred and gives an clear useful insights of the Data.