

# **DATA MANAGEMENT PROJECT REPORT**

(Project Semester August-December 2020)

## ***CUSTOMER SUCCESS DASHBOARD***

Submitted by

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Programme and Section: B.Tech CSE KM070

Course Code : INT217

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**Lovely Professional University, Phagwara**



## **CERTIFICATE**

This is to certify that T. Sindhu bearing Registration no. 11804718 has completed INT-217 project titled, “**Customer Success Data**” under my guidance and supervision. To the best of my knowledge, the present work is the result of his/her original development, effort and study.

**Signature and Name of the Supervisor**

**Designation of the Supervisor**

**School of Computer Science and Engineering**

Lovely Professional University

Phagwara, Punjab.

### **DECLARATION**

I, T.Sindhu, student of Computer Science and Engineering under CSE/IT Discipline at, Lovely Professional University, Punjab, hereby declare that all the information furnished in this project report is based on my own intensive work and is genuine.

Date : 25-11-2020

Signature: *T. Sindhu*

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Name of the student: T.Sindhu

## **ACKNOWLEDGEMENT**

The satisfaction that accomplishes the successful completion of this project would be incomplete without the mention of the people who made it possible, without whose constant guidance and encouragement would have made efforts go in vain. I consider myself privileged to express gratitude and respect towards all those who guided me through the completion of this project.

I convey thanks to my project guide Ms. Vasudha of Computer Science and Engineering Department for providing encouragement, constant support and guidance which was of a great help to complete this project successfully.

Last but not the least, I wish to thank my parents for financing my studies in Lovely Professional University as well as constantly encouraging me to learn engineering. Their personal sacrifice in providing this opportunity to learn engineering is gratefully acknowledged.

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# **INTRODUCTION**

## **Data Management:**

Data management is the process of ingesting, storing, organizing and maintaining the data created and collected by an organization. Effective data management is a crucial piece of deploying the IT systems that run business applications and provide analytical information to help drive operational decision-making and strategic planning by corporate executives, business managers and other end users.

## **Excel:**

**Excel** is a handy software that can be **used** to store and organize many data sets. Using its features and formulas, you can also **use** the tool to make sense of your data. For example, you could **use** a spreadsheet to track data and automatically see sums averages and totals.

Easy data entry and operations: One of the main advantages of MS excel is that it facilitates smooth and easy data entry. Compared to any other data entry and analyzing tools, MS Excel offers features like **Ribbon** interface, a set of commands used to perform certain operations

## **Excel Dashboard:**

An **Excel dashboard** is one-pager (mostly, but not always necessary) that helps managers and business leaders in tracking key KPIs or metrics and take a decision based on it. It contains charts/tables/views that are backed

by data. A **dashboard** is often called a report, however, not all reports are **dashboards**.

A well-designed **dashboard** provides on-demand access of all of your most **important** metrics. Access to data – As the name implies, a **dashboard** gathers multiple data sources, including **Excel**, into a single interface. That means you can immediately see a detailed overview of your business in one quick glance.

The main **purpose** of an operational dashboard is to provide a comprehensive snapshot of performance, which means that you should incorporate a large amount of detail without using too many drilldowns. Analytical Dashboards – Use data from the past to identify trends that can influence future decision-making.

## **OBJECTIVES / SCOPE OF ANALYSIS**

The goal of data management is to help people, organizations, and connected things optimize the use of data within the bounds of policy and regulation so that they can make decisions and take actions that maximize the benefit to the organization.

### **Excel Objectives:**

- Indicate the names and functions of the Excel interface components.
- Enter and edit data.
- Format data and cells.
- Construct formulas, including the use of built-in functions, and relative and absolute references.
- Create and modify charts.

- Preview and print worksheets.
- Use the Excel online Help feature

### **Objectives:**

1. To analyze the total sales to find out the trend.
2. To analyze the revenue of each product by region/state.
3. To compare the product wise revenue.
4. To compare the state wise product wise sale count.
5. To analyze the customer satisfaction.
6. To compare the product wise returns.
7. To create a dynamic and highly responsive Dashboard.

### **SOURCE OF DATASET**

<https://excelfind.com/tutorials/well-designed-and-interactive-excel-dashboard/>

The Dataset consists of 10 columns: Date, Customer acquisition type, State, product, price, units, Revenue, Delivery performance, Return, Customer Satisfaction.



## Picture of the Data Set:

	A	B	C	D	E	F	G	H	I	J
1	Date	Customer Acquisition Type	State	Product	Price	Units	Revenue	Delivery Performance	Return	Customer Satisfaction
2	01-01-2017	Ad	Florida	Product 2	199	4	796	on-time	no	(2) low
3	01-01-2017	Returning	North Carolina	Product 3	299	9	2691	on-time	no	(1) very low
4	02-01-2017	Organic	Mississippi	Product 2	199	6	1194	on-time	no	(3) ok
5	03-01-2017	Organic	Florida	Product 4	99	3	297	delayed	no	(2) low
6	03-01-2017	Returning	Mississippi	Product 2	199	7	1393	on-time	no	(3) ok
7	03-01-2017	Returning	Florida	Product 1	499	6	2994	delayed	no	(2) low
8	03-01-2017	Organic	Georgia	Product 2	199	4	796	on-time	yes	(3) ok
9	03-01-2017	Organic	South Carolina	Product 4	99	5	495	on-time	no	(3) ok
10	03-01-2017	Organic	South Carolina	Product 3	299	1	299	on-time	yes	(4) high
11	03-01-2017	Ad	Georgia	Product 5	399	7	2793	on-time	no	(5) very high
12	03-01-2017	Returning	Mississippi	Product 5	399	1	399	on-time	yes	(3) ok
13	03-01-2017	Ad	Alabama	Product 3	299	4	1196	on-time	no	(5) very high
14	03-01-2017	Returning	North Carolina	Product 2	199	4	796	on-time	no	(3) ok
15	03-01-2017	Ad	Alabama	Product 1	499	10	4990	on-time	no	(3) ok
16	03-01-2017	Returning	Alabama	Product 4	99	6	594	on-time	no	(4) high
17	03-01-2017	Organic	Georgia	Product 1	499	1	499	on-time	no	(3) ok
18	03-01-2017	Organic	South Carolina	Product 4	99	5	495	on-time	no	(2) low
19	04-01-2017	Ad	North Carolina	Product 4	99	5	495	on-time	no	(4) high
20	05-01-2017	Organic	Florida	Product 1	499	10	4990	delayed	no	(4) high
21	05-01-2017	Returning	South Carolina	Product 4	99	3	297	delayed	no	(3) ok
22	06-01-2017	Organic	South Carolina	Product 3	299	3	897	on-time	no	(3) ok
23	06-01-2017	Returning	Florida	Product 4	99	10	990	on-time	no	(5) very high
24	06-01-2017	Ad	Mississippi	Product 1	499	10	4990	on-time	no	(4) high
25	06-01-2017	Organic	Mississippi	Product 1	499	1	499	on-time	no	(1) very low
26	06-01-2017	Ad	Tennessee	Product 5	399	7	2793	on-time	yes	(3) ok
27	06-01-2017	Ad	Florida	Product 1	499	5	2495	on-time	no	(3) ok
28	06-01-2017	Ad	South Carolina	Product 4	99	5	495	on-time	no	(3) ok
29	06-01-2017	Organic	South Carolina	Product 3	299	3	897	on-time	no	(2) low
30	06-01-2017	Organic	Florida	Product 4	99	7	693	on-time	no	(2) low
31	06-01-2017	Returning	North Carolina	Product 1	499	8	3992	on-time	no	(4) high
32	06-01-2017	Organic	North Carolina	Product 4	99	6	594	on-time	no	(3) ok
33	06-01-2017	Returning	Georgia	Product 5	399	8	3192	delayed	no	(2) low
34	06-01-2017	Ad	Georgia	Product 2	199	10	1990	on-time	no	(3) ok

data table
pivot table
map
donut
Sheet6
Sheet5
Sheet8
Sheet1
+

Accessibility: Investigate

## ANALYSIS ON DATASET

### INTRODUCTION

**A sales report is a summary of all sales activity that occurs over a specific period of time.**

A sales report is important because it allows the team, company managers and executives to assess how well their products or services are doing.

A sales report, gives an overview of the state of the sales activities within a company. It shows the different trends happening in the sales volume over a certain time, but also analyses the different steps of the sales funnel and the performance of sales executives.

They give a snapshot of the company's exercise at a specific moment in time to assess the situation and determine the best decision to make and the type of action to undertake. These reports help in finding potential new market opportunities where they could improve the results by using modern sales reporting software.

They can be of various forms: a daily sales report format will track sales KPIs that are relevant on a daily basis: the number of phone calls or meetings set up by a representative, or the number of leads created. Typically, weekly sales reports templates can monitor the number of deals closed by the team or the revenue generated. A monthly sales report format will provide a bigger picture of the activity of each sales representative or the team as a whole. Putting it all together on sales dashboards will enable you to automate our data and focus on human-centric tasks, without the need for time-consuming manual calculations and repetitive exports.

There are also different variations of reports that will focus on different aspects: the sales performance in general, detailing the revenue generated, the sales volume evolution, measuring it against the sales target pre-set, the customer lifetime value, etc. There are also reports focusing on the sales representative

themselves and their sales cycle performance, from lead generation to closing a deal.

## **GENERAL DESCRIPTION**

A data dashboard is an information management tool that visually tracks, analyzes and displays key performance indicators (KPI), metrics and key data points to monitor the health of a business, department or specific process. They are customizable to meet the specific needs of a department and company. Behind the scenes, a dashboard connects to your files, attachments, services and API's, but on the surface displays all this data in the form of tables, line charts, bar charts and gauges. A data dashboard is the most efficient way to track multiple data sources because it provides a central location for businesses to monitor and analyze performance. Real-time monitoring reduces the hours of analyzing and long line of communication that previously challenged businesses. A dashboard is an easy to read, one page summary of the analysis of the information. It is an overview of your system at a glance. There are many advantages that result in the utilization of this tool. Some of the most important benefits are:

1. Customizable:-Dashboards could be customized in terms of users and expectations. Each decision level dashboard can be customized to present the most valuable and useful set of information. This allows each person to see the level of detail that they need in order to get their job done and meet their goals.
2. All-in-one:- In the past users would spend large amount of time reviewing and analysing different reports to end in a final conclusion. This tool allows to see, at a glance, an overall situation report of the desired information.
3. Drill into detail:- But, having all-in-one does not means the absence of details. Dashboards are developed with the ability to get as deeper in information as required by simply selecting the desired variable or object.

4. Intuitive data presentation:- There is no need for complicated and exhaustive training. Dashboards are design to be intuitive to any user. The graphic design allows an easy and smooth navigation throughout the information.
5. Mobile device accessible:- Most dashboards software are programmed to suit any mobile device. The idea is to reach anywhere, to everyone, in a timely manner with the most accurate information.

The dashboard method of reviewing details and viewing the status of operations provides a significant opportunity to make your business more efficient and quick to respond to issues and opportunities.

## **Specific Requirements**

### **Pivot Table:**

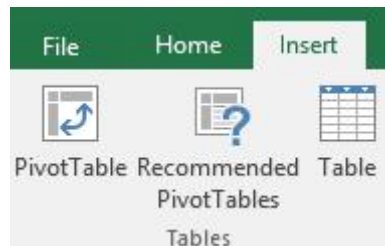
A Pivot Table is used to summarize, sort, reorganize, group, count, total or average data stored in a table. It allows us to transform columns into rows and rows into columns. It allows grouping by any field (column), and using advanced calculations on them.

### **How to create a PivotTable**

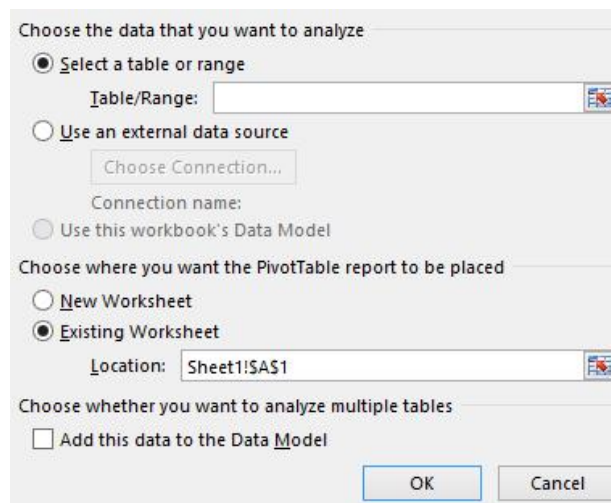
1. Select the cells you want to create a PivotTable from.

**Note:** Your data shouldn't have any empty rows or columns. It must have only a single-row heading.

2. Select **Insert > PivotTable**.



3. Under Choose the data that you want to analyze, select Select a table or range.

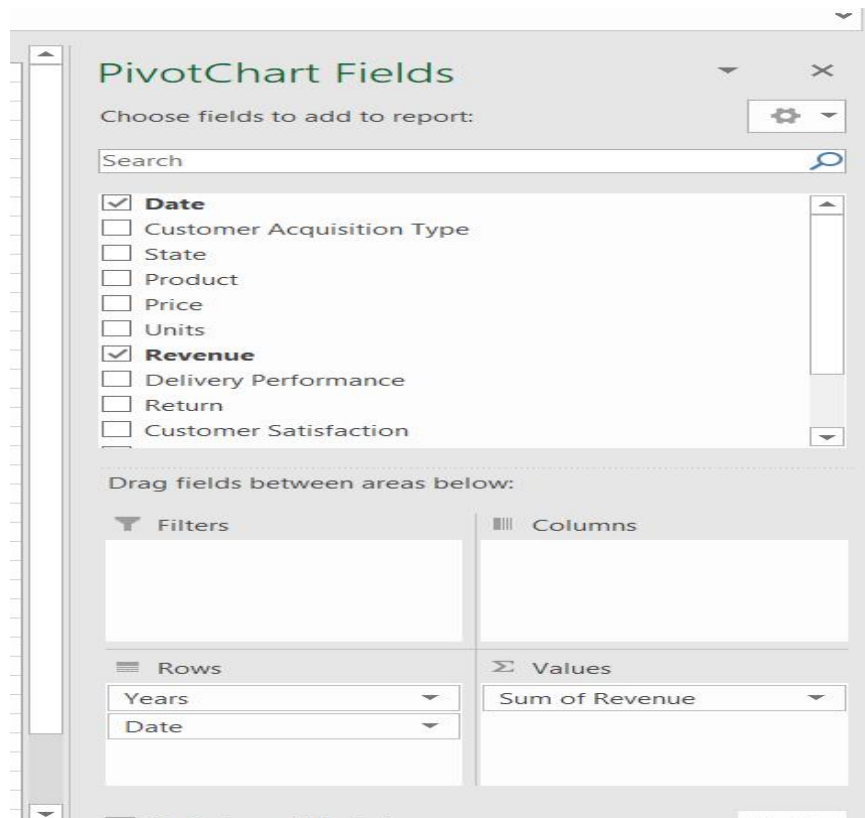


4. In Table/Range, verify the cell range.
5. Under Choose where you want the PivotTable report to be placed, select New worksheet to place the PivotTable in a new worksheet or Existing worksheet and then select the location you want the PivotTable to appear.
6. Select OK.

## Building out PivotTable

1. To add a field to your PivotTable, select the field name checkbox in the **PivotTables Fields** pane.

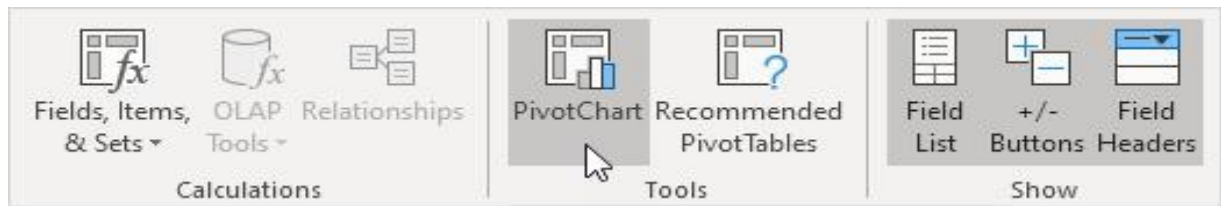
**Note:** Selected fields are added to their default areas: non-numeric fields are added to **Rows**, date and time hierarchies are added to **Columns**, and numeric fields are added to **Values**.



2. To move a field from one area to another, drag the field to the target area.

Pivot tables created for the Dashboard are:





The Insert Chart dialog box appears.

1. Click OK.

## Line Graph

A line graph (also called a line chart or run chart) is a simple but powerful tool and is generally used to show changes over time. Line graphs can include a single line for one data set, or multiple lines to compare two or more sets of data.

The essential components of a line graph are the same as other charts. They include the following:

- **X axis (Horizontal Axis):** On a line graph, the X axis is the independent variable and generally shows time periods.
- **Y axis (Vertical Axis):** This axis is the dependent variable and shows the data you are tracking.
- **Legend:** This section provides information about the tracked data to help viewers read and understand the graph. A legend is most useful when a graph has more than one line.
- **Plot Area:** The space on which the data is plotted.

Here I plotted a line graph between year and total revenue. X-axis contains years along with months and Y-axis contains the sum of revenue.



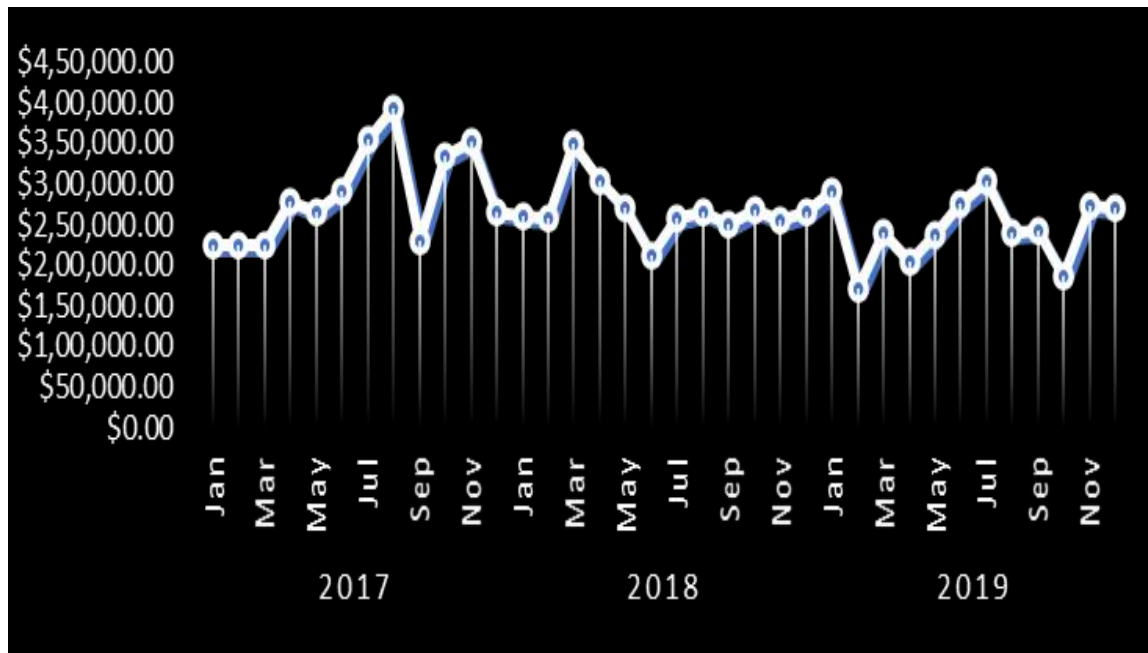


Figure 2 Line Graph

## Map Chart

Map Chart are used to compare values and show categories across geographical regions. Use it when you have geographical regions in your data, like countries/regions, states, counties or postal codes.

Map charts have gotten even easier with geography data types. Simply input a list of geographic values, such as country, state, county, city, postal code, and so on, then select your list and go to the Data tab > Data Types > Geography. Excel will automatically convert your data to a geography data type, and will include properties relevant to that data that you can display in a map chart. In the following example, we've converted a list of countries to geography data types, then selected the Tax revenue (%) field from the Add Column control to use in our map.

Now it's time to create a map chart, so select any cell within the data range, then go to the Insert tab > Charts > Maps > Filled Map.

If the preview looks good, then press OK. Depending on your data, Excel will insert either a value or category map.

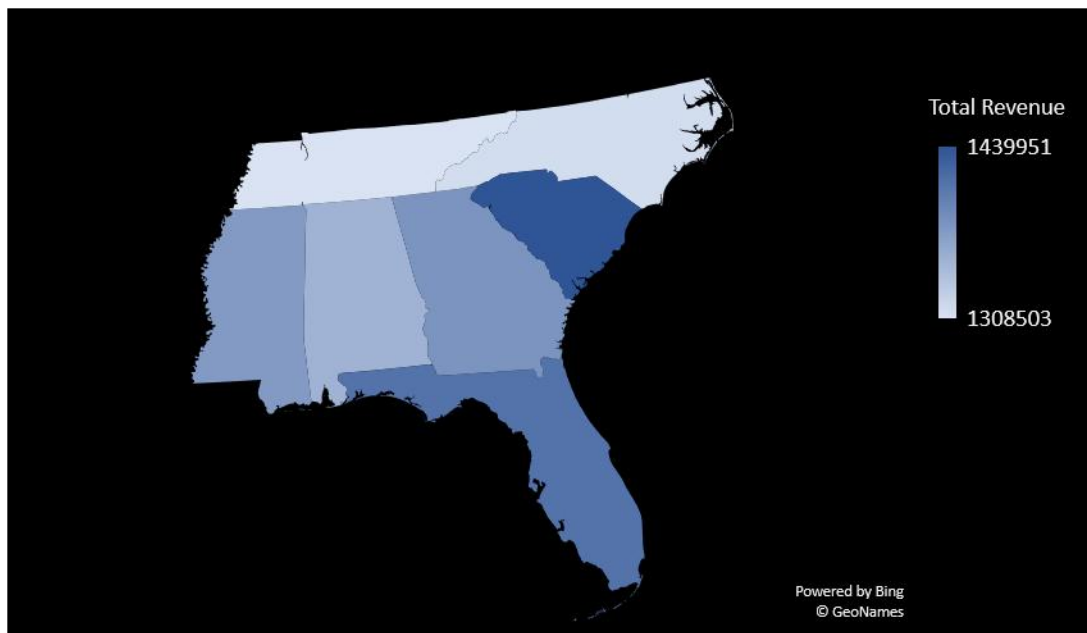


Figure 3 Map Chart

## Graph

In Microsoft Excel, a chart is often called a graph. It is a visual representation of data from a worksheet that can bring more understanding to the data than just looking at the numbers.

A chart is a powerful tool that allows you to visually display data in a variety of different chart formats such as Bar, Column, Pie, Line, Area, Doughnut, Scatter, Surface, or Radar charts. With Excel, it is easy to create a chart.

A chart is a tool you can use in Excel to communicate data graphically. Charts allow your audience to see the meaning behind the numbers, and they make showing comparisons and trends much easier.

Charts are often used to ease understanding of large quantities of data and the relationships between parts of the data. Charts can usually be read more quickly than the raw data. They are used in a wide variety of fields, and can be created by hand (often on graph paper) or by computer using a charting application.

### **waterfall chart**

A waterfall chart shows a running total as values are added or subtracted. It's useful for understanding how an initial value (for example, net income) is affected by a series of positive and negative values. The columns are color coded so you can quickly tell positive from negative numbers.

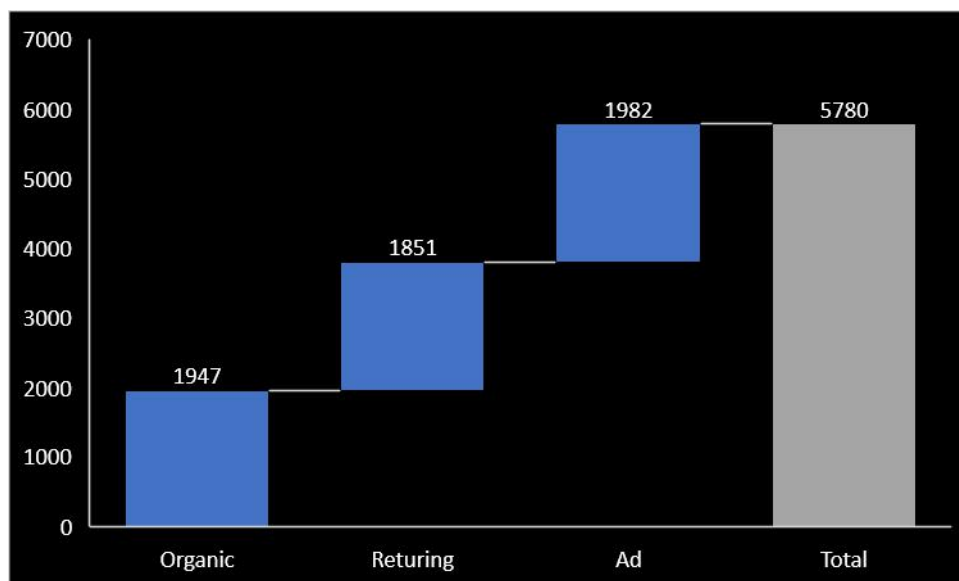


Figure 4 Waterfall Chart

### **BAR GRAPH**

A bar chart (also called a bar graph) is a great way to visually display certain types of information, such as changes over time or differences in size, volume, or amount. Bar charts can be horizontal or vertical; in Excel, the vertical version is referred to as column chart.

### Different Kinds of Bar Charts

Excel provides variations of Bar and Column charts. Here's a quick summary of each:

- **Stacked:** A chart that shows the dependent variables stacked on top of each other. This chart is also called segmented.
- **Clustered:** A chart that displays a group of dependent variables, also called grouped. A double graph is a clustered graph that has two dependent variables.
- **3D:** A chart that shows the dependent variables in a 3D format.

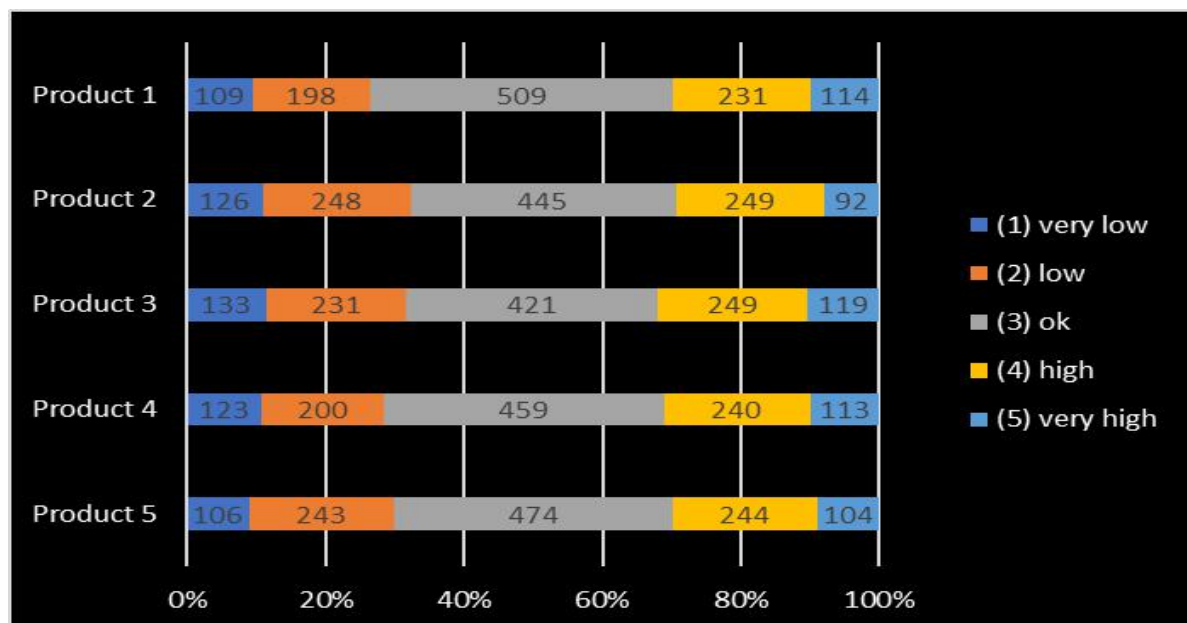


Figure 5 Stacked Bar chart

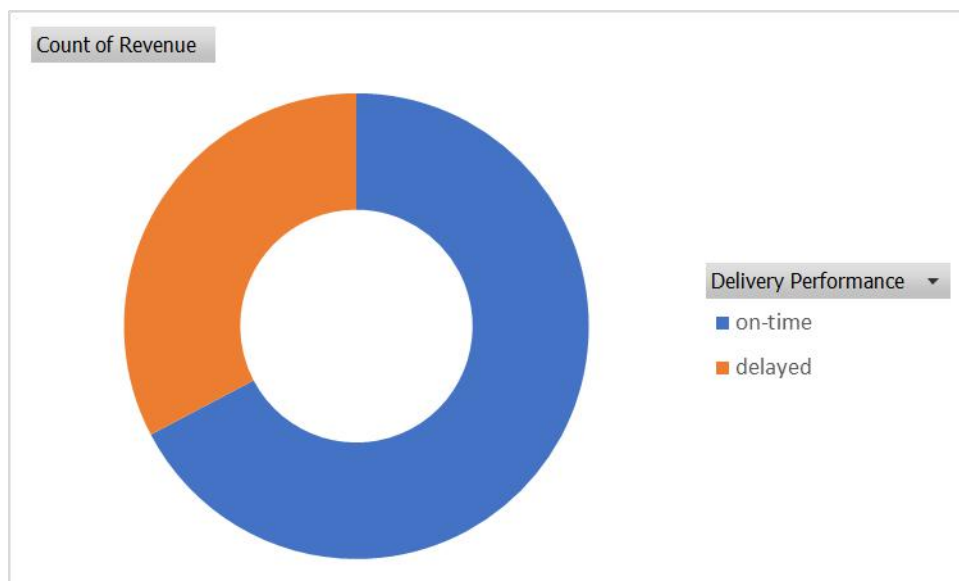
### Doughnut chart

A donut chart is essentially a Pie Chart with an area of the centre cut out.

Pie Charts are sometimes criticised for focusing readers on the proportional areas of the slices to one another and to the chart as a whole. This makes it tricky to see the differences between slices, especially when you try to compare multiple Pie Charts together.

A Donut Chart somewhat remedies this problem by de-emphasizing the use of the area. Instead, readers focus more on reading the length of the arcs, rather than comparing the proportions between slices.

Also, Donut Charts are more space-efficient than Pie Charts because the blank space inside a Donut Chart can be used to display information inside it.



**67%**

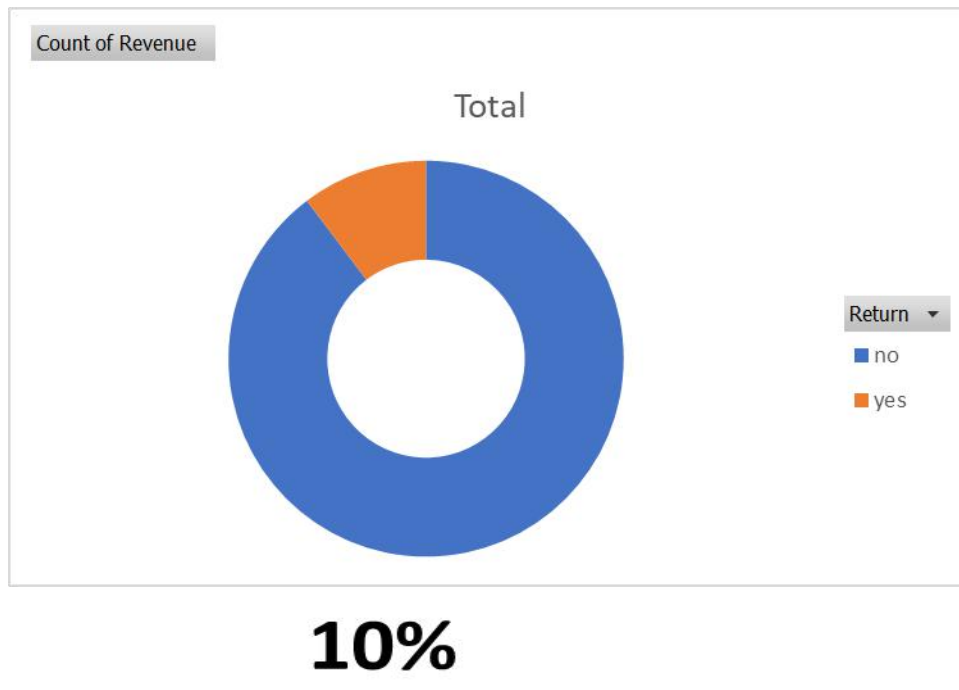
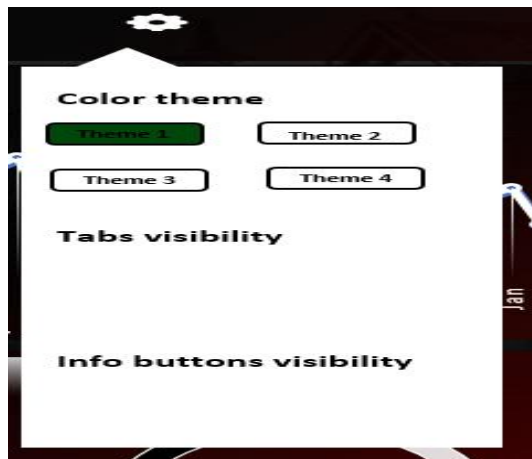


Figure 6 Doughnut chart

## Settings Button

Created settings button by using VBA(Visual Basic for Applications).

Visual Basic for Applications (VBA) is part of Microsoft Corporation's (NASDAQ: MSFT) legacy software, Visual Basic, which Microsoft built to help write programs for the Windows operating system.



```
Microsoft Visual Basic for Applications - ASSIGNMENT ON PMT.xlsx - [Sheet8 (Code)]
File Edit View Insert Format Debug Run Tools Add-Ins Window Help
Ln 56, Col 5

[General] [Change_Settings_Menu_Visibility]

End Sub

' settings Menu Button

Sub Change_Settings_Menu_Visibility()

    With ActiveSheet
        If .Shapes("Settings_Button").Fill.Transparency = 1# Then
            'Visibility Settings Button
            .Shapes("Settings_Button").Fill.Transparency = 0#

            'Visibility Settings Menu
            .Shapes("Settings_Menu_Frame").Visible = True
            .Shapes("Theme_Button_1").Visible = True
            .Shapes("Theme_Button_2").Visible = True
            .Shapes("Theme_Button_3").Visible = True
            .Shapes("Theme_Button_4").Visible = True

        Else
            'Visibility Settings Button
            .Shapes("Settings_Button").Fill.Transparency = 1#

            'Visibility Settings Menu
            .Shapes("Settings_Menu_Frame").Visible = False
            .Shapes("Theme_Button_1").Visible = False
            .Shapes("Theme_Button_2").Visible = False
            .Shapes("Theme_Button_3").Visible = False
            .Shapes("Theme_Button_4").Visible = False

        End If
    End With

End Sub
```

Here, I created settings button having particulars as :

### 1. Theme selection

These buttons are for selecting appropriate theme for dashboard as per our desire. And makes dashboard more attractive.

### 2. Tabs Visibility

Tabs present in the current dashboard as Revenue and units at the

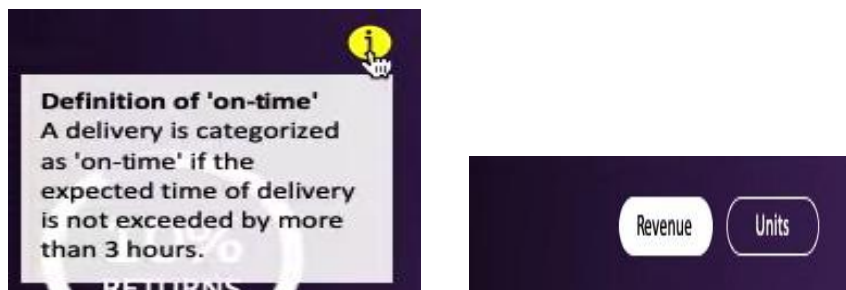
linegraph shows the sales trend between years(2017,2018,2019) and

Revenue/Units wise of the sales.

Here , we made a selection between revenue/ units wise analysis to displaying line graph by making tabs for individuals.

### 3. Info button Visibility

Info button at the doughnut says the definition of on-time as a note.



## Slicers

Slicers provide buttons that you can click to filter tables, or PivotTables. In addition to quick filtering, slicers also indicate the current filtering state, which makes it easy to understand what exactly is currently displayed.

we can connect multiple slicers and multiple pivot tables to make our visualization report dynamic.

Inserting a slicer :

1. Adding slicers to regular tables:



When you add a slicer to regular Excel tables, they just act like auto-filters and filter your table data. To add a slicer to regular table, use Insert ribbon > Insert Slicer button.

## 2. Adding slicers to Pivot tables:

To add a slicer, you can do either of these things:

Right click on pivot table field you want and choose “add as slicer”

### Single vs. Multi-selection in Slicers

- You can select a single item or multiple items in slicers. To multi-select,
- If the items you want are together, just drag from first item to last.
- If the items you want are not together, hold CTRL key and click on one at a time.
- Creating interactive charts with slicers

Since slicers talk to Pivot tables, you can use them to create cool interactive charts in Excel. The basic process is like this:

- Set up a pivot table that gives you the data for your chart.
- Add slicer for interaction on any field (say slicer on customer’s region)
- Create a pivot chart (or even regular chart) from the pivot table data.
- Move slicer next to the chart and format everything to your taste.
- And your interactive chart is ready!



Figure 7 Slicers

## FORMULAS

- **GETPIVOTDATA()**

The GETPIVOTDATA Function is categorized under Excel Lookup and Reference functions. The function helps to extract data from specified fields in an Excel Pivot Table. The pivot table is used often in financial analysis to facilitate deeper analysis of given data. The function helps extract, group, or add data from a pivot table.

**=GETPIVOTDATA(data field, pivot table, [field1, item1, field2, item2], ...)**

The GETPIVOTDATA function uses the following arguments:

1. **Data field** (required argument) – This is the worksheet information from which we intend to remove nonprintable characters.
2. **Pivot table** (required argument) – This is a reference to a cell, range of cells, or named range of cells in a pivot table. We use the reference to specify the pivot table.
3. **Field1, Item1, Field2, Item2** (optional argument) – This is a field/item pair. There are up to 126 pairs of field names and item names that may be used to describe the data that we wish to retrieve.

## Analysis Results

An **Excel dashboard** is one-pager (mostly, but not always necessary) that helps managers and business leaders in tracking key KPIs or metrics and take a decision based on it. It contains charts/tables/views that are backed by data. A dashboard is often called a report, however, not all reports are dashboards.

The **Excel Dashboard** is used to display overviews of large data tracks. Excel Dashboards use dashboard elements like tables, charts, and gauges to show the overviews. The dashboards ease the decision-making process by showing the vital parts of the data in the same window.

**With the dataset I created Pivot tables and with help of those pivot tables I also created pivot charts of different types with suitable rows and columns.**

**I also created different bar graphs to represent my dashboard.**

- Pivot table: A pivot table is a statistics tool that summarizes and reorganizes selected columns and rows of data in a spreadsheet or database table to obtain a desired report.

Pivot tables are especially useful with large amounts of data that would be time-consuming to calculate by hand. A few data processing functions a pivot table can perform include identifying sums, averages, ranges or outliers. The table then arranges this information in a simple, meaningful layout that draws attention to key values.

Result of this is shown Figure 1.

- Line Graph: A line graph (also called a line chart or run chart) is a simple but powerful tool and is generally used to show changes over time. Line graphs can include a single line for one data set, or multiple lines to compare two or more sets of data.

Result is shown in figure 2.

- Graph: In Microsoft Excel, a chart is often called a graph. It is a visual representation of data from a worksheet that can bring more understanding to the data than just looking at the numbers.

- Map chart: Map Charts are used widely in Excel to visualize a specific Key Performance Indicator (KPI) and show their distribution across multiple geographical regions for a chosen category: for example, company, division or product.

Result is shown in figure 3.

- Bar Graph: A bar chart (also called a bar graph) is a great way to visually display certain types of information, such as changes over time or differences in size, volume, or amount. Bar charts can be horizontal or vertical; in Excel, the vertical version is referred to as column chart.

Result is shown in figure 4.

Result is shown in figure 5.

- Doughnut chart : A doughnut (or donut) chart serves a similar purpose to a pie chart, except that it is able to show more than one set of data. Think of it as a pie chart with an additional dimension.

Result is shown in figure 6.

- Slicers : Slicers provide buttons that you can click to filter tables, or PivotTables. In addition to quick filtering, slicers also indicate the current filtering state, which makes it easy to understand what exactly is currently displayed. we can connect multiple slicers and multiple pivot tables to make our visualization report dynamic.

Result is shown in figure 7.

## **VISUALIZATION**

A Dashboard provides a high-level overview of your dataset. It usually comprises of various charts, tables, and visualizations that are pleasing to the eye and easy to interpret. The design and contents of the dashboards are pre-decided and are always available at the click of a button, which helps in the process of quick decision making.

Dashboards are a data visualization tool that allow all users to understand the analytics that matter to their business, department or project. Even for non-technical users, dashboards allow them to participate and understand the analytics process by compiling data and visualizing trends and occurrences.

Below is the picture of Sales Dataset visualization:



## Conclusion:

Throughout the project I learned how to use the pivot tables and charts and some other features. The minor Microsoft features (Excel) that I did not know before. It was amazing to me how there are functions that were very good for analyzing the datasets. Being aware of such functions will benefit a lot as a data science student and will help my future career to go smoothly. I learned that it is important to play around with the software. This is the key to learning more about excel and other software's that is installed in the computers. I wish I had sufficient time to explore more about the Excel that we went over in class.

I have learnt how to build an interactive dashboard using Excel. This is a simple approach and can easily be applied to any other data. As we have seen, Excel dashboards are simple and easy to build, has a good number of features, and above all, it's free to build and to share with others.

Because time is limited, salespeople need to have information that quickly shows a holistic view of their deals with the ability to easily dive deeper into any data point—without requiring much time or effort. Sellers spend the majority of their time in a CRM tool because it contains information they need to close their deals. However, account details often get buried on multiple screens, and having an accurate, overall understanding of an account is difficult. Sales dashboards allow sellers to focus their time on selling and less time on administrative tasks or searching for data they need.

## References

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- <https://trumpexcel.com/creating-excel-dashboards/>
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**Title:** Dashboard on Sales Dataset.

Dan Bricklin

Dan Bricklin invented the spreadsheet---but don't hold that against him. The father of the spreadsheet. December 22, 2015. This article is more than 2 years old. You may not know Dan Bricklin, but you are almost certainly familiar with his work.

Microsoft originally marketed a spreadsheet program called Multiplan in 1982. ... Microsoft released the first version of Excel for the Macintosh on September 30, 1985, and the first Windows version was 2.05 (to synchronize with the Macintosh version 2.2) in November | 1987.

Software genre: Spreadsheet

Developer: Microsoft Corporation