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## DATA ANALYSIS IN EXCEL

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### Abstract

Excel is a powerful tool used for analysing data that enables users to manipulate, analyse, and visualize large amounts of complex data in simple form. Excel is used in many industries, like finance, accounting, marketing, and sales. This article highlights the essential role of Excel in data analysis and its significance in today's world. In this paper, I would like to explain what data analysis is, what tools are used in data analysis, how it is applied in Excel, and how the raw data is converted into useful information for decision-making. Along with this, I would like to cover the essential Excel functions used for data analysis.

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### INTRODUCTION

Data analysis is the process of inspecting, cleaning, analysing, and transforming the raw data into meaningful information for decision-making. In today's business world, data analysis plays a vital role in decision-making and helping businesses operate more effectively. Microsoft Excel is one of the most popular analytical tools, with built-in pivot tables. Excel allows you to examine and interpret the data in many ways. There are a variety of formats and conversions available in Excel. There are some essential functions in Excel, like date and time functions, text functions, financial functions, what-if analysis, subtotals, data models, quick analysis, power pivot, auditing tools, power map, and other commands. Formulas are also used to analyse the data.

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## Objective

Microsoft Excel is the most recommended and familiar tool for all industries, from technical to management. Hence, data analysis using Excel empowers you to understand the natural language queries that allow you to ask questions without writing any complicated formulas, and we can also apply analysis techniques to datasets.

## Data Analysis: Primary data(though sample size 70),and Secondary Data

### PRIMARY DATA

It is the information collected directly without any references. The data required for accomplishments of this project has been collected mainly by conducting interviews with officers and staff individually or collectively and some of the information had been verified (or) supplemented conducting personal observation method.

### SECONDARY DATA

The secondary data is the data which is already available. It is obtained from online. Websites, Journals, and books.

## The process of analyzing the data

The data analysis process typically involves several phases. like,

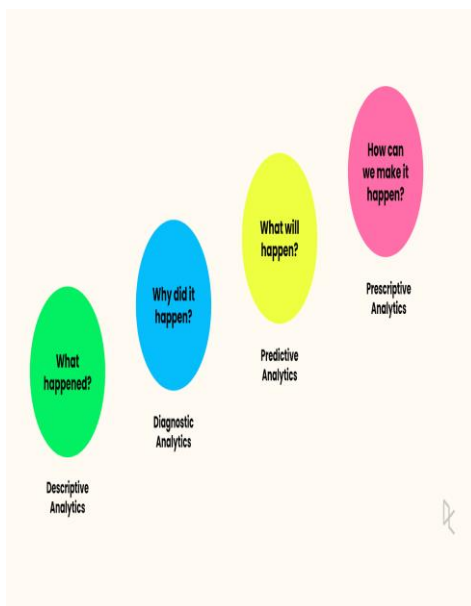
1. Identifying the business problem
2. Collect the raw data, which will help solve the problem.
3. Cleaning the raw data
4. Analyzing the data (with a variety of techniques)
5. Visualizing the data

1. **Identifying the business problem:** The identification is the stage in which you establish the questions you will need to answer. Once the questions are outlined you can move for the next step.
2. **Collecting the raw data:** Once you have identified the problem, then you can start collecting the data. You can collect the data from internal(data is generated from your own organization) and external sources(this can include like social media platforms and websites), surveys, interviews, and focus groups.
3. **Cleaning the data:** Discarding the data, which is irrelevant, duplicated, inconsistent and outdated. Once the data is cleaned, then u can start the analysis process.

4. **Analysing the data:** we can analyse the with different techniques such as,

- a) Descriptive analysis
- b) Diagnostic analysis
- c) Predictive Analysis
- d) Perspective Analysis

Lets go through the analysis little depth..



**Descriptive Analysis: “What Happened”?**

This analysis describes and summarises the quantitative data in statistical format.

**Diagnostic analysis: “Why did it Happen”?**

It examines the root causes of events, behaviours, and outcomes, This tool identifies the patterns, trends, and connections to explain why it has been occurred.

**Predictive Analysis: “What will happen in the future”**

It involves making predictions about the future based on evidence. Utilizing machine learning, artificial intelligence, data analysis, and statistical models, this procedure looks for trends that could indicate future actions.

**Perspective Analysis: “What we should do about it”**

Here, where Data-Driven decision comes into play. Perspective analysis gathers all the three types of analysis and uses them for decision making.

**5. Visualizing the data:**

**Visualization** helps you to spot patterns, trends, or outliers .Use appropriate visualization based on the type of data and the insight to convey. we can visualize the data using charts, graphs, (or)plots.

**Tools for Data Analysis**

- **Excel:** An advanced Excel will help you clean and visualize the data. It also allows you to use charts and conditional formatting to identify trends and patterns. With Excel, you can carry out the following tasks::

- Regression analysis
- Statistical analysis
- Inferential statistics
- Descriptive statistics
- Exploratory data analysis
- Tableau Public

- R Programming.
- Python
- Apache Spark
- SAS
- RapidMiner

## Essential Excel Functions used for Data Analysis

**1.Concatenate():** It is used to combine two or more Strings, Numbers, Dates and other data into single cell.

=Concatenate([t1],[t2],[t3],...)

**2.Len():** It is used to display number of characters in each cell.

=len(text)

**3.Days():** It is used to count number of days between ending date and starting date

=days(end date, start date)

**4.Sumif():** In Excel to sum cells based on numbers that meet specific criteria.

=sum(= SUMIFS  
(sum\_range, range1, criteria1, [range2], [criteria2], ...)

**5.Averageifs():** it is just like an SUMIF, you can take an average based on one or more parameters.

=Averageifs(avgrang,  
range1, criteria1, [range2], [criteria2], ...)

**6.Countsifs():** The countifs() counts the number of values that satisfy a set of conditions.

=countifs(range.criteria)

**7.Counta():**It counts cells containing any type of information, including error values and empty text

=counta(cell Range)

8. **Countblank()**: It counts the blank cells.

=countblank(cell Range)

9. **Vlookup()**: Vlookup stands for “Vertical Lookup” and is used to search for specific value in the first column of dataset and retrieve a corresponding value from a different column within the same row.

=vlookup((lookupvalue,  
table\_array, column\_index\_num,  
[range\_lookup])

10. **Hlookup()**: The letter H represents "Horizontal." Using the Hlookup() function, you can find a value in the top row of an array of values and then retrieve the value from a specified row in the table or array in the same column..

= hlookup( lookup\_value,  
table\_array, row\_index\_num,  
[range\_lookup] )

11. **Find/Search**: The Find() returns the position of one text string within another.

= FIND (find\_text, within\_text,  
[start\_num])

= SEARCH (find\_text, within\_text,  
[start\_num])

12. **Left/Right**: =left ()and =right() are simple and efficient ways for retrieving static data.

= Left (text, [num\_chars]) , =  
Right (text, [num\_chars])

## Methods for data analysis using Excel

**Conditional Formatting**: It creates rules that determine the format of cells based on their values. It also highlights certain values or make particular cells easy to identify.

**Sorting and Filtering**: Adding a filter allows you to better analyzation.

**Subtotals**: Subtotal() allows to calculate smaller amounts separate from the final total.

**Quick Analysis**: This tool analyses the data very quickly. we can easily analyze add the table, apply conditional formatting, etc

**PivotTables**: Excel has a strong function for data analysis and summary. The most

useful technique for analyzing data is this one. You can drag fields, sort, filter, or modify the summary computation once a pivot table has been inserted. Pivot tables in two dimensions are also an option. Important features include Update Pivot Table, Calculated Field/Item, Pivot Chart, Frequency Distribution, Group Pivot Table Items, Multi-level Pivot Table, and Get PivotData.

**Data Visualization:** Visualization can be done using charts and graphs.

**Data Validation:** It gives you authority over the kinds of data that are entered into a cell. It could be necessary to insert only valid values into the cells. If not, they run the danger of yielding inaccurate outcomes. With the help of data validation commands, you can quickly set up a cell's data validation values, show an error message when an invalid entry occurs, prompt the user with an input message asking what to type in the cell, and validate the values provided against the specified criteria. It might be required to fill in the cells with only legitimate values. If not, they could lead to computations that are not accurate. A prompt message informing the user of what to type in the cell may be simply set up, and the values submitted can be verified against

**Financial Analysis:** Financial analysis often involves using functions, formulas, and charts. If you have specific financial data or metrics

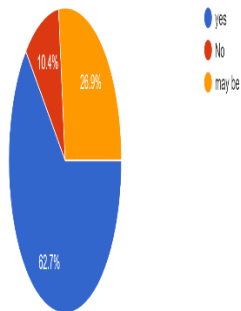
**Formula Auditing:** When you utilise formulas, you should double-check that they are working correctly. Excel's formula auditing tools help you with error checks, tracing dependent and prior variables..

**What-if Analysis:** With pivot tables, important data may be extracted from a vast dataset. It's the most practical type of data analysis. After inserting a Pivot Table, you can modify the summary calculation, sort, filter, and drag and drop fields. Moreover, two-dimensional pivot tables are possible. The features that are necessary are Calculated Field/Item, Update Pivot Table, Pivot Chart, Frequency Distribution, Group Pivot Table Items, Multi-level Pivot Table, and Get PivotData.

**Statistical Analysis:** Data analysis on customer satisfaction on swiggy

1. Will Swiggy maintain the timely standards in food delivery?

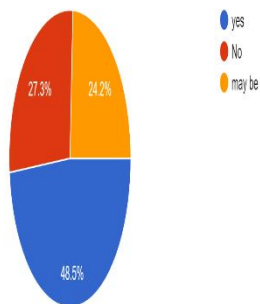
67 responses



Data interpretation: By seeing the above data analysis, Swiggy maintains the Timely food Delivery Standards

2. Are the delivery charges imposed by swiggy apt?

66 responses

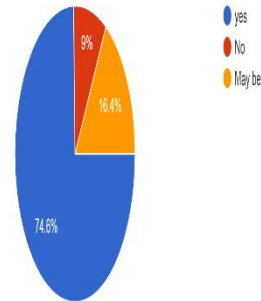


Data interpretation: Swiggy's delivery charges depends on individual perspectives. Some users find these charges reasonable in exchange for the convenience of having food delivered to their doorstep, while others may have varying opinions on what is considered apt or appropriate. By seeing

above data analysis charges imposed by Swiggy apt is satisfied.

3. Is packaging standard maintained by swiggy?

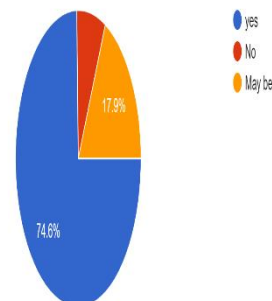
67 responses



Data interpretation: By seeing the above analysis, Swiggy's efforts in ensuring that food arrives in good condition through secure and appropriate packaging.

4. Does swiggy respond to its customer query?

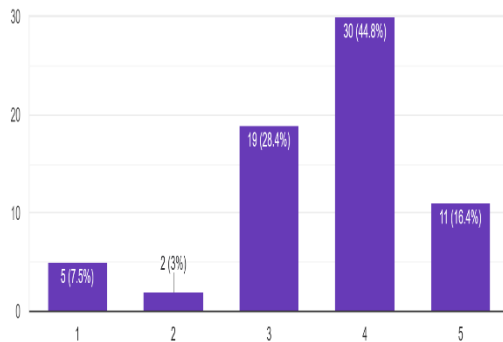
67 responses



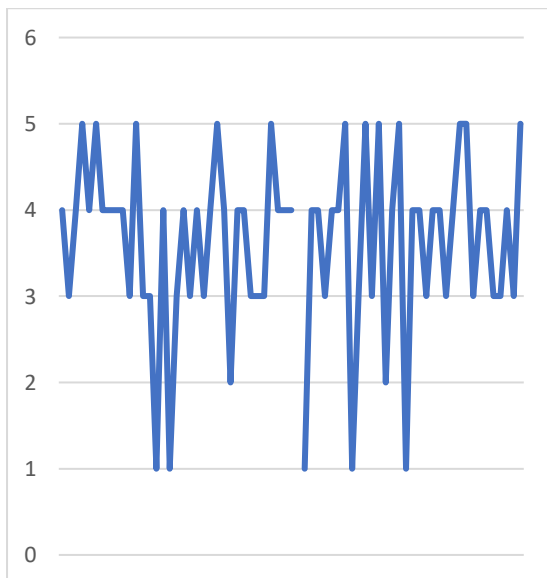
Data interpretation :By seeing the above analysis, we can easily make out response is very good.



10. On a rate of 1 to 5, how satisfied are you with swiggy  
67 responses



**Overall Customer Satisfaction on swiggy**



**Data interpretation:** By visualizing the above data we can conclude that found trend of high customer satisfaction with Swiggy. Consumer has given higher rating comparing to other online food options according to my survey. This I depicted in a form of data visualisations by using excel

tools and methods. In this way excel is useful to business operations to showcase their data.

**Conclusion:** Excel is a crucial tool for data analysis, and it offers a range of features that enable users to manipulate and analyze large amounts of data efficiently. you can learn advanced techniques for data analysis in Excel, including data visualization, machine learning, and statistical modeling.

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