Proficiency in data analysis and presentation using MS Excel

Chapter overview

This topic will introduce you to key elements of data analysis and presentation. You will learn some relevant data analysis techniques as well as ways to present your data in a visual manner. Through a combination of research, video resources and group activities, you will continue progressing with your proposal while developing a deeper understanding of data analysis and presentation techniques. By the end of this topic, you will be equipped to demonstrate some data analysis and presentation skills and use these when creating the consultancy proposal digital poster (for your summative assignment). This topic aims to give you some fundamental steps which you can also build on in further studies.

Learning outcomes

- Developing skills in data analysis and presentation using MS Excel
- Apply data analysis techniques to your research data

Chapter summary
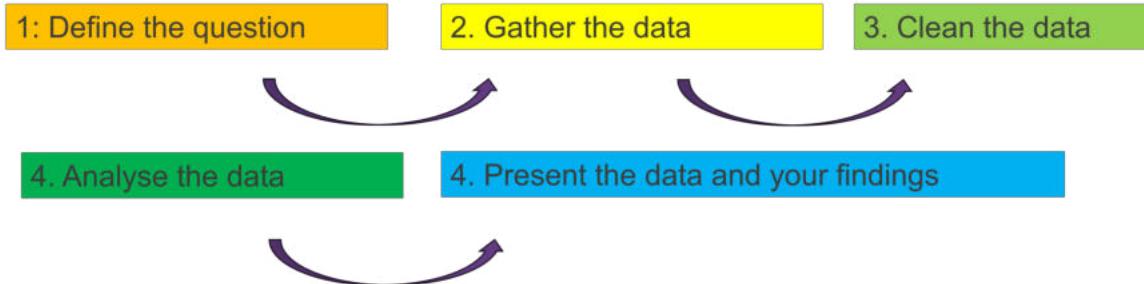
In this topic, you will explore data analysis and presentation techniques using Microsoft Excel, one of the most widely used tools. You will gain practical knowledge on how to use Excel to efficiently organise, analyse, and visualise data.

Throughout the learning process, we will examine the advantages and limitations of different data presentation techniques. We will encourage the development of critical thinking skills, enabling you to reflect on the pros and cons of data presentation approaches. You will also have access to step-by-step videos that demonstrate these techniques helping to reinforce your understanding through real-time examples. These recordings are designed to make it easier for you to replicate the procedures on your own. In addition, the activities will allow you to apply what you've learned in practical scenarios and strengthen your skills.

By the end of this topic, you should feel confident in your ability to use Excel not just as a basic spreadsheet tool, but as a powerful platform for data-driven analysis and presentations. You will be better equipped to analyse and present your findings in the consultancy proposal.

1 What is data analysis?

'Data analysis is the process of systematically collecting, cleaning, transforming, describing, modeling, and interpreting data, generally employing statistical techniques.' (Eldridge, 2023)

1: Define the question	2. Gather the data	3. Clean the data
4. Analyse the data	4. Present the data and your findings	

(Adapted from: Stevens, 2023)

To find patterns, trends, and connections, data analysis entails gathering and processing data. The insights can be utilised to create strategic decisions that enhance performance, productivity, or profitability. To identify the most popular products, for instance, a business may examine client purchase data and modify its inventory or marketing tactics. Data analysis aims to turn data into knowledge that helps make informed, fact-based decisions. Gaining a competitive edge, predicting market demands, and effectively resolving issues are all made possible by this approach in today's data-driven business world. Although the precise steps may differ based on the kind of data and the research's objectives, the main steps in data analysis are as above.

By now, you will have a well-defined challenge (s) and a research question(s) to address. Next, you must determine the types of data you will require and its source. Now that you have a specific research question (s) in mind, you may begin gathering your data. Statistics published by organisations as well as government portals and platforms could be helpful. After gathering your data, you must prepare it for analysis, which entails cleaning your dataset completely. Duplicates, abnormalities, and missing data in your original dataset should all be eliminated because they may skew how the data is interpreted. Although it can take a lot of effort, data cleansing is essential to getting reliable findings. The type of data you're dealing with and the research question(s) you're asking will determine how you analyse it. Findings can be presented in an understandable manner, such as a chart or graph, depending on the sort of research you did. At this point, you will present the findings of the data analysis (Stevens, 2023).

1.1 Why is data analysis important?

Data analysis:

-Helps with 'converting information into actionable insights by detecting patterns, relationships, and gaps...' (Kumar, 2024)

-Can provide an evidence-based perspective on how an organisation is performing

-It helps to make decision making more objective

-Can lead to meaningful insights

Businesses must constantly improve their data analysis skills in order to be competitive in the fast-paced, technologically advanced world of today. Numerous advantages of data analysis contribute to operational success and strategic expansion. Initially, it facilitates well-informed decision-making by decreasing dependence on intuition and employing past and current data to assess performance, predict future patterns, and efficiently manage risks. Secondly, data analysis helps to improve workflow operations in departments like supply chain management, logistics, and customer service by revealing inefficiencies and pointing out areas that can be automated. Additionally, it may offer vital information about pricing tactics, market positioning, the efficacy of promotions, and rival performance, all of which assist companies in improving their approach to the market. Data analysis in financial situations facilitates more precise forecasting, profit optimisation, and budgeting. Additionally, it improves security and compliance by identifying anomalies and possible fraud. The capacity to efficiently assess data ultimately enables firms to spot opportunities, react to change in a proactive manner, and make long-term plans (Kumar, 2024).

1.2 What are descriptive statistics?

'Descriptive statistics are the numerical and graphical techniques used to organise, present and analyse data.' (Fisher and Marshall, 2009)

'Descriptive statistics helps facilitate data visualization. It allows for data to be presented in a meaningful and understandable way, which, in turn, allows for a simplified interpretation of the data set in question.' (Corporate Finance Institute, 2022)

The purpose of descriptive statistics is to provide an informative, numerical, and graphical summary of numerical and categorical data. The best way to communicate the key characteristics of the data is to use a set of descriptive statistics rather than presenting each value separately. Descriptive statistics can be used to guide additional statistical analyses, or they can be adequate on their own, depending on the project's scope (Lee, 2020).

BPP

1.3 How to use descriptive statistics in MS Excel?

The direct link to the video can be found at https://www.youtube.com/watch?v=pfYhwy3wN14

The above video titled "Descriptive Statistics in Excel Using the Data Analysis Tool" provides a clear and practical guide on how to efficiently compute descriptive statistics within Microsoft Excel. Designed especially for those new to data analysis, the video takes the viewer through each step, beginning with the essential task of ensuring the Data Analysis Toolpak is correctly installed.

Initially, users are advised to check whether the Data Analysis Tool appears in the 'Data' tab on the Excel ribbon. If the tool is visible, then it has already been installed. However, for those who do not see it, the video explains how to manually install the Toolpak. To do this, users must go to 'File', scroll to 'Options', and click on 'Add-ins'. Within the Excel Options dialogue box, users will find a drop-down menu at the bottom labelled 'Manage Excel Add-ins'. By selecting 'Go', users access a list of available add-ins. They are then instructed to check the box next to 'Analysis Toolpak' and click 'OK'. This action activates the tool. The speaker recommends restarting Excel if the tool does not appear immediately, noting that this process only needs to be completed once.

Once the Data Analysis Tool is installed, the tutorial proceeds to demonstrate how to apply it to compute descriptive statistics for a specific variable within a dataset. The example used in the tutorial involves a dataset containing information about students, specifically focusing on the variable "Grade on Exam", which is located in column C of the spreadsheet.

To begin the analysis, users are directed to click on the 'Data Analysis' button within the 'Data' tab. A dialogue box appears, listing various analytical options. From this list, 'Descriptive Statistics' is selected. After clicking 'OK', a new dialogue box specific to descriptive statistics appears. This is where users define the input range for the data. The narrator demonstrates three ways to select the input range.

Next, the tutorial explains the importance of checking the 'Labels in first row' option. Since the dataset contains a label ("Grade on Exam") in the first row, this checkbox ensures that Excel does not treat it as a numerical value during calculations. For the output, users are encouraged to select 'New Worksheet Ply', which allows the results to be displayed on a separate worksheet for clarity. Additionally, the 'Summary statistics' checkbox is selected to generate a comprehensive set of statistical results.

The video also explores optional fields in the dialogue box: 'Kth Largest' and 'Kth Smallest'. These allow users to identify specific ranks within the dataset. By default, both fields are set to 1, which simply reflects the maximum and minimum values already included in the summary statistics. To add more depth, the narrator changes the values in both fields to 2. This modification allows the output to display the second largest and second smallest values in the dataset, offering additional insight.

Upon confirming all selections, the user clicks 'OK' and Excel generates the descriptive statistics on a new worksheet. The narrator briefly adjusts the display settings to ensure all labels are visible and readable. The output includes several important measures such as the mean, standard error, median, mode, standard deviation, sample variance, kurtosis, skewness, range, minimum, maximum, sum, and count (which reflects the sample size, denoted by 'n'). Furthermore, the results show the second largest and second smallest values as previously specified.

The speaker concludes by interpreting some of the output. For instance, the largest value in the dataset is 99, which corresponds to the maximum score on the exam, while the smallest is 55. The second largest and second smallest values are 98 and 62, respectively. These figures help provide a clearer picture of data distribution beyond the basic summary.

The tutorial highlights the efficiency of using Excel's Data Analysis Toolpak, particularly in comparison to manual calculations or alternative methods such as using formulas or pivot tables. These other techniques, while valid, require more time and technical proficiency. The tool, therefore, represents a user-friendly and time-saving solution for students and professionals alike who need to perform basic statistical analyses.

In conclusion, this video offers a concise and informative walkthrough for calculating descriptive statistics in Excel using the Data Analysis Tool.

(The above summary is adapted from: Learn Something, 2017)

1.4 Elements include

Mean – 'The *mean* of a set of numbers in a data set is obtained by adding up all the numbers then dividing by the size of the data set. When people use the word 'average' in everyday conversation, they are usually referring to the mean.' (Newcastle University, n.d.)

Median – 'The *median* is usually described as the 'middle number.' (Newcastle University, n.d.)

Mode – 'The *mode* is the most common number that appears in your set of data.' (Newcastle University, n.d.)

Sum – The total amount based on adding up all the values in the data set

Min – The smallest value in the dataset

Max – The largest value in the dataset

Range – Subtracting the smallest value from the largest one

When completing your data analysis as per the above recording, you have seen that some of the descriptive statistics elements you can gain access to included sample variance, skewness etc. In this module, we encourage you to use some of the easiest-to-understand elements as per the slide above. If you wish to develop your understanding of descriptive statistics and go further in this topic, please look at the extension resources or alternatively search for online resources.
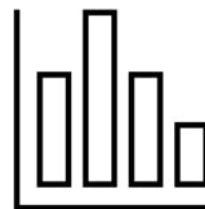
You could also find it helpful to include percentages when completing your data analysis in addition to the above elements.

2 Why is data presentation important?

A Picture Is Worth a Thousand Words

Data presentation:

-To tell the story in a way that your audience can easily comprehend

-To persuade the audience of your point of view

-To help people interpret your information quickly

-To make the information easier to remember
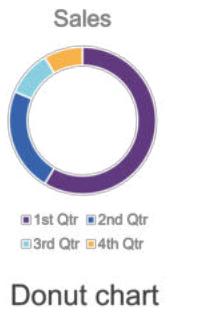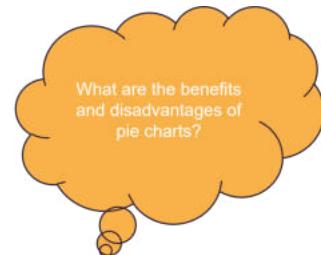
Businesses are better equipped to monitor and document data about their goods and services, clients, corporate operations, as technology develops. Because of this, it is becoming more and more important to be able to analyse and use data to make better decisions. An important factor in persuading your audience is the way you present the data. You can strengthen your points by using visual aids like graphs, and charts. Your point of view can gain credibility and people will be able to appreciate the value of your ideas when your data is well-structured and simple to understand. Focussing on presenting data in an understandable manner improves your capacity for persuasion, communication, and making an impact.

More engaging and successful data presentations can also be made with the use of animations and digital presentation tools. Because the brain absorbs images 60,000 times quicker than words and because images are more likely to be recalled than words, they can be essential to data presentations. Stories are more likely to stick in the minds of audiences than a collection of disparate facts and figures, albeit this may not be true for all types of data. Although the most significant component of a data presentation is its content, the visual design is equally vital. Everything from layout to colour and font selection should be taken into consideration, and the

BPP

presentation should be clear and simple to grasp. Your audience can become distracted by the design if you use colours that don't go well together. On the other side, your audience can concentrate on your message if you choose a type that is easy to read and colours that merge nicely (University of San Diego, 2020).

## 2.1 How to present data
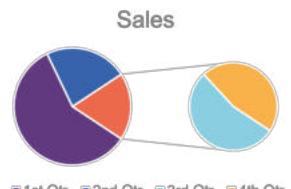
'A pie chart is a circular chart divided into sections to visualize the part-whole relationship of data variables.' (Derek, 2022)

Donut chart

3 D Pie chart

Pie of pie chart

A pie chart is a circular graph with slices that show how much of each category there is in the entire dataset. A particular data variable is represented by each slice, whose size indicates the variable's proportion or share of the total. This visual aid works especially well for showing part-whole relationships, which makes it simple to compare proportions and quickly comprehend how various categories are distributed (Derek, 2022).

A percentage or proportionate piece of the whole is represented by each circle in a pie chart. When all of the chart's slices are combined, the circle's 360 degrees and 100% are represented. Such a circle chart can be used, for instance, to display a corporation and its market share. A further instance might be the representation of consumer preferences and market trends. Pie charts are a popular tool for data visualisation in many organisations across the world. However, just like any other type of data visualisation, pie charts offer advantages and disadvantages. You can make the best use of the chart if you are aware of them.

2.2 Benefits and disadvantages of using pie charts

You can make quick comparisons between different data categories

Small categorical differences could be hard to show

Can be more visually appealing than some graphs

The audience could find it challenging to comprehend the exact size of the slices in the pie

Provides a straightforward visual representation of data

Presenting large data sets could be challenging

(Adapted from: Ethans, 2024)

Pie charts are a quick and easy way to visualise data, which makes them a useful tool for communication. Pie charts help readers rapidly understand the links between several categories by presenting data as fractions of a whole. Pie charts have an easy-to-understand layout and they are a common option for presentations where clarity and audience participation are essential due to their visual attractiveness. Pie charts are, all things considered, a useful method of presenting data in an eye-catching and easily comprehensible manner (Ethans, 2024).
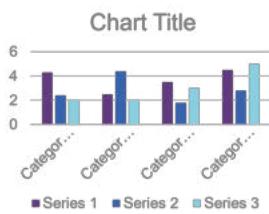
Pie charts work well for showing simple data, but they are not the best option for showing massive datasets. When six or fewer categories are presented, they work best because too many slices can make it less clear. Comparing slice sizes accurately can be challenging, particularly when the changes are minimal. If slices are too thin to be easily seen, small differences between categories could go unreported. Additionally, it is easy for visual elements like colour schemes, slice arrangement, and chart tilt to cause data to be misinterpreted. As a result, even though pie charts can look visually appealing, they are best used for simple comparisons with few categories (Ethans, 2024).

2.3 How can you present secondary data? – Bar chart/ bar graph
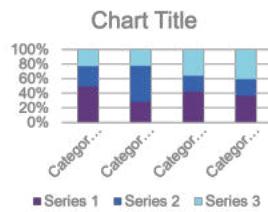
'Bar charts are used to make **comparisons**, show **rankings**, frequency **distributions**, and **deviations**, and to emphasize **individual values**.' (Sukumar, n.d)

What are the benefits and disadvantages of bar charts?
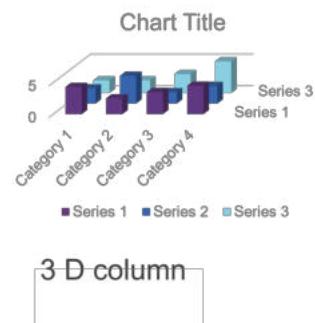
Bar charts=Bar graphs (these mean the same)

Clustered column

Stacked column

3 D column

Bar charts are useful tools that are frequently used to compare various categories. They work well for showing rankings because they make it simple for viewers to see which values are greatest and which are lowest. They are also helpful in identifying trends by showing variations from a baseline or predicted values. Bar charts give data clarity and insight by highlighting individual values (Sukumar, n.d.).

BPP

2.4   Benefits and disadvantages of using bar charts

Reasonably easy to create

It may be less engaging than other visual tools

Makes data straightforward to understand

'Sometimes, the bar graph fails to reveal the patterns, cause, effects, etc.' (Nida, 2022)

It clarifies trends of data better than tables (Nida, 2022)

It is easy to make mistakes such as overcrowding the presentation or inputting incorrect information (which could lead to false results)

When presenting data, bar graphs have a number of benefits. They help easily comprehend complex information by summarising data. Bar graphs may efficiently show frequency distributions by presenting each data category in an understandable manner, making cross-category comparison simple. Additionally, they facilitate the identification of patterns or trends in the data, offering a more comprehensive knowledge than would be possible with a table of numbers. Bar graphs also make data easier to obtain and analyse by allowing users to quickly estimate important quantities. They are a great tool for efficiently presenting and simplifying facts. Bar graphs have several drawbacks, however. Since their primary focus is visual comparison, they might not be able to uncover deeper patterns, causes, or effects within the data. Bar graphs can also be readily altered by changing the scale, axis, or data selection, which could result in inaccurate data representation. Because of this, it is important to use caution when interpreting bar graphs and to make sure the information is correct (Nida, 2022).

2.5   When to use them?

	Bar chart	Pie chart
To show the relative amount for categories/ values, and make highest and lowest clear	Bar chart	n/a
To show a trend	Bar chart	n/a
To show relevant percentages	Bar chart	Pie chart
To compare relevant percentages	Bar chart	Pie chart

For example, trends in the share prices of a company

(Adapted from: Saunders, Lewis and Thornhill, 2023)

By showing you how prices fluctuate over time, bar charts can assist you in identifying trends in company share prices. A certain time period can be represented by each bar, which also displays important information including opening, closing, high, and low prices. Patterns, such as regular increases, decreases, or variations, can be noted by looking at the height and direction of the bars. These patterns may reveal how well a business is performing, how the market is changing or how it is reacting to outside events.

2.6   Presenting data using MS Excel – pie charts

Direct link to the video is https://www.youtube.com/watch?v=0WNJkBXywMU

In this video, the speaker demonstrates how to create a pie chart in Microsoft Excel, specifically tailored for visualising data with percentages. The example provided focuses on the results of 53

students in a college test, with scores ranging from an A (the highest) to an E (the lowest). The process begins by selecting the data for the pie chart, which consists of the number of students achieving each grade. The instructor then guides the user through the creation of a simple, two-dimensional pie chart using the 'Insert' tab in Excel, where various chart styles, such as 2D, 3D, or donut charts, are available. For this demonstration, the 2D pie chart is chosen.

After the basic chart is created, the next step is to add data labels to make the chart more informative. Data labels, which can show the values of each slice, are essential in ensuring the chart conveys the correct information. The speaker highlights two methods for adding data labels: one by clicking the small plus icon at the top right corner of the chart, or alternatively, by navigating through the 'Add Chart Element' option in the menu. However, since the chart originally shows the number of students in each grade, it is more appropriate to display the data as percentages, which represent the proportion of the total number of students achieving each grade.

To change the labels to percentages, the user selects the graph, then opens the 'Format Data Labels' menu. Within this sidebar, the 'Percentage' option is checked while unchecking the 'Value' option. This conversion ensures that each pie slice represents the percentage of students in each grade category, providing a clearer understanding of the distribution of scores. The position of the data labels can also be adjusted within the same sidebar, where options such as 'Inside End', 'Outside End', or 'Center' are available. For this tutorial, the labels are set to appear at the 'Inside End' of each slice for a neater presentation.

Another adjustment that can be made to the pie chart is the angle of the first slice. The speaker demonstrates how to rotate the entire pie chart by modifying the 'Angle of First Slice' setting. This adjustment is useful for altering the chart's appearance, particularly if there is a preference for a specific starting slice. In the example, the instructor leaves the angle at zero degrees, as the default order is satisfactory.

Additionally, the speaker shows how to explode a slice of the pie chart, which is a common technique used to highlight a particular segment. By increasing the 'Explosion' slider, the slices gradually start to separate. The instructor initially adjusts the entire chart but then resets it to demonstrate how to explode just one slice. By clicking on the specific slice (in this case, the slice representing students who achieved an A), the instructor can adjust the 'Explosion' slider to highlight that slice, making it stand out from the rest of the chart. This feature is useful for emphasising certain categories of data, such as a particularly high-performing group.

Another key point discussed is how to change the colour of the pie slices. To do this, the speaker simply selects a slice and then navigates to the 'Format Shape Fill' option, where they can choose a new colour. This can be done for each individual slice, allowing for a custom colour scheme that enhances the visual appeal and clarity of the chart. Similarly, the colour of the data labels can be altered by selecting the labels and using the 'Text Fill' option to change the colour of the text. For better visibility, the instructor opts to change the label text colour to white.

Finally, the title of the pie chart is updated to something more descriptive, such as "Class Test Scores," reflecting the purpose of the chart more accurately. The completed pie chart now displays the students' test results in a clear and visually appealing manner, with percentage data labels, an exploded slice for emphasis, and custom colours for better clarity.

This video covers the essential steps for creating a professional-looking pie chart in Excel, making it easy for users, especially international students, to understand the process. The focus on percentages instead of raw numbers is particularly important in educational settings, as it allows for a more intuitive understanding of the data. The flexibility to customise the chart further, such as adjusting the explosion effect, the angle of the first slice, and the colours, makes the pie chart not only informative but also visually engaging. By following this guide, you can effectively present and analyse data using pie charts in Excel.

(The above summary is adapted from: Bradburn, 2021)

2.7 Presenting data using MS Excel – bar graphs

Direct link to the recording can be found at https://www.youtube.com/watch?v=fk-iFv5_Rdo

An excellent method for effectively and visually presenting your data is to use a graph. Excel has a wide variety of chart styles and selecting the ideal one can help you present your data in an understandable and interesting way.

The video tutorial titled *"How to Make a Bar Graph in Excel"* provides clear and concise guidance on how to create a basic bar graph using Microsoft Excel.

The video begins with a brief introduction to the significance of graphs in Excel. Graphs serve as a powerful tool for visualising data in a clear and engaging way. Among the various chart types offered by Excel, the bar graph is highlighted in this tutorial. The speaker states that selecting the appropriate type of chart is crucial for effectively conveying the intended message of the data.

The focus of this video is on presenting monthly sales figures using a bar graph. To begin the process, one must first select the data range in the Excel spreadsheet that is intended to be represented in the graph. After selecting the data, the user should navigate to the 'Insert' tab at the top of the Excel interface. Within the 'Charts' section, the user is instructed to select the bar graph option. Although Excel offers several design variations for bar graphs, the tutorial recommends choosing the default option for simplicity. Upon selection, Excel instantly generates and inserts the graph into the spreadsheet.

Following the graph's creation, the video demonstrates several customisation options that allow users to tailor the graph to their preferences. The first customisation feature involves repositioning the graph. This can be achieved by clicking on the blank space within the chart area, holding the left mouse button, and dragging the graph to the desired location on the spreadsheet.

Next, the video explains how to resize the graph. This can be done by clicking on any of the small circles located at the corners of the chart area. By dragging these points in any direction, users can adjust the size of the graph to better suit their layout requirements. The video then moves on to editing the chart title. Initially, the graph appears with the default caption 'Chart Title'. To rename the graph, one simply needs to click on the existing caption to activate the text box and then type in a new, more relevant title.

In addition to these basic modifications, the recording shows how to alter the colour scheme and overall design of the bar graph. This is done by clicking on the chart area and navigating to the 'Design' tab. Under the option 'Change Colour', Excel offers a variety of colour palettes to choose from. Furthermore, by exploring the 'Chart Styles' section and clicking the drop-down arrow, users can browse through different visual styles for the graph. This feature enables users to select a design that best matches their presentation style or institutional preferences.

An important aspect of Excel graphs, as pointed out in the video, is their dynamic nature. This means that any changes made to the data in the original spreadsheet are automatically reflected in the graph. To demonstrate this, the sales figure for the month of August is changed from 41 to 154, and the graph updates immediately to represent the new value. This dynamic updating feature ensures accuracy and efficiency, especially when working with evolving datasets.

The video is presented in a user-friendly and approachable manner, making it particularly suitable for international students and individuals new to Excel. It provides a practical foundation for anyone looking to develop their data presentation skills using one of the most widely used spreadsheet tools in the academic and professional world.

(The above summary is adapted from: ExcelTutorialsEasyClickAcademy , 2019)

3 MS Excel data analysis tutorial

Please watch the below video called 'Introduction to Pivot Tables, Charts, and Dashboards in Excel (Part 1)'.

The direct link to the video can be found at https://www.youtube.com/watch?v=9NUjHBNWe9M

Summary: Introduction to Pivot Tables, Charts, and Dashboards in Excel – Part One: A Comprehensive Guide for International Students

The video titled *"Introduction to Pivot Tables, Charts, and Dashboards in Excel (Part 1)"* offers a structured and accessible introduction to the fundamental concepts of pivot tables, pivot charts, and dashboards in Microsoft Excel. It is particularly aimed at beginners, such as new employees or students who may be unfamiliar with Excel's powerful data analysis tools. Through the

narrative of a character named Andy, a new employee facing the challenge of preparing reports and a dashboard from a large dataset, the video simplifies what might initially seem like a complex task into manageable, straightforward steps. This summary aims to capture the key instructional content of the video.

The session begins by introducing Andy, a character newly employed in an organisation and assigned a demanding task by his superior. Andy has been given an extensive spreadsheet filled with data and a list of reports required for an upcoming presentation. Despite being enthusiastic about the assignment, he is initially uncertain about how to convert the raw data into a meaningful and visually appealing dashboard. The central purpose of the video series is to guide viewers through the same process Andy must undertake—transforming data into informative pivot tables and interactive dashboards using Excel's built-in tools.

At the outset, the presenter reassures viewers that pivot tables are not as complex as they might appear. Unlike other advanced Excel features, pivot tables do not require sophisticated formulas or knowledge of Visual Basic for Applications (VBA). Instead, they operate using a simple drag-and-drop interface, making them accessible even to those with limited technical skills. As part of the instructional content, John introduces a proprietary Excel add-in called Pivot Pal. Although Pivot Pal enhances the pivot table experience by simplifying certain tasks and saving time, it is not essential for creating the dashboards shown in the tutorial. All necessary functionality is available within standard Excel.

The presenter begins by demonstrating how to create a basic pivot table that summarises revenue by sales representative. Additionally, he shows how to visualise this information using a pivot chart, which translates the data into a clear, interpretable graph. This process starts with reviewing the source data, which is the original dataset exported from the company's general ledger software. The data includes order information for the month of December and contains details such as order dates, customer names, sales representatives, regions, shipping details, product information, pricing, and revenue.

Before creating a pivot table, it is essential to ensure that the dataset is organised in a tabular format. A tabular format consists of a single row of headers at the top, with each column representing a unique variable. Each subsequent row contains records that align with those headers. The speaker advises checking for and removing any blank rows or columns, especially within important fields such as dates. It is also recommended to eliminate merged cells, which can occur when data is exported from external software, as these can interfere with pivot table creation.

To begin constructing the pivot table, the user navigates to the "Insert" tab in the Excel ribbon and selects the "PivotTable" button. When prompted, Excel usually detects the appropriate range automatically if the user has already clicked within the dataset. If not, the user can manually select the data range. The pivot table can then be placed either in a new worksheet or within the existing one. For clarity and organisation, John suggests placing the pivot table in a new worksheet.

Upon creation of the pivot table, a pane titled "PivotTable Fields" appears on the right-hand side of the screen. This pane displays all the column headers from the source data, allowing users to drag fields into one of four distinct areas: Filters, Columns, Rows, and Values. For example, to summarise revenue by sales representative, the user drags the "Salesperson" field into the Rows area and the "Revenue" field into the Values area. Excel automatically computes the total revenue for each salesperson and displays it accordingly. This feature illustrates the true power of pivot tables—summarising large datasets into clear, concise insights with minimal effort.

The speaker further explains how the pivot table performs its calculations. The presenter filters the original dataset for one particular salesperson—Andrew—and manually calculates the sum of revenue generated by Andrew. He then compares it with the value shown in the pivot table and confirms that Excel's output matches the manual calculation. This verification helps users understand that pivot tables essentially automate the processes of filtering and aggregating data, saving time and reducing errors.

The pivot table layout can also be customised. A standard pivot table might feature sales representatives in the rows, time periods in the columns (such as quarters), and metrics like total revenue in the values area. Filters, such as the year, can be placed at the top of the table to allow further refinement. This layout enables users to interactively explore data from various angles.

BPP

One limitation with raw pivot tables is that their numeric values are not formatted by default. For financial data, applying proper currency formatting improves readability. Users can right-click on any value in the Values area, select "Value Field Settings," and then click "Number Format" to access the familiar "Format Cells" dialog box. From there, they can choose "Currency" and remove decimal places to clean up the appearance of the report.

Sorting the data within the pivot table is another useful feature. By right-clicking a revenue value and selecting "Sort Largest to Smallest," the table can be rearranged so that the highest-performing salesperson appears at the top. This visual hierarchy allows for easier comparison and identification of trends or outliers in the dataset.

To further aid interpretation, John demonstrates how to insert a pivot chart. With the pivot table selected, the user clicks on the "PivotChart" button under the "Analyse" or "Options" tab and selects a bar chart. The default formatting of Excel's pivot charts may not be aesthetically pleasing, so several customisations are recommended. These include removing unnecessary field buttons, adjusting the order of categories to match the pivot table, deleting redundant axis labels and legends, removing vertical grid lines, and modifying the bar width by reducing the gap between bars. Users can also add data labels for clarity and insert an informative title, such as "Sales by Representative for December 2014." These improvements result in a professional and visually appealing chart suitable for presentations.

To streamline the process of building pivot tables, John introduces the Pivot Pal add-in. This tool appears under the "Excel Campus" tab in the ribbon once installed. Pivot Pal includes a search feature that quickly locates fields in the dataset, eliminating the need to manually scroll through the field list. For instance, typing "Salesperson" instantly narrows down the results. Once the desired field is selected, users can place it into the appropriate area—Rows, Columns, Values, or Filters—using either buttons or keyboard shortcuts.

Another notable feature of Pivot Pal is its ability to automatically apply formatting based on the original data. When using the standard Excel interface, users must manually format numeric fields each time they are added to the Values area. Pivot Pal, however, detects the existing format in the source data and applies it automatically. If the user's source data is not preformatted or if they prefer a different format, Pivot Pal also provides a menu of predefined and custom formatting options that can be applied with ease.

The video serves not only as an introduction to technical features in Excel but also as a motivational resource for beginners. Through clear explanations and practical demonstrations, viewers gain confidence in using pivot tables and charts to transform raw data into meaningful insights. Andy, the fictional new employee, is used as a relatable figure whose journey from confusion to competence mirrors that of many real-life users encountering pivot tables for the first time.

In summary, this instructional video provides a thorough and engaging foundation for mastering pivot tables, pivot charts, and dashboards in Excel. It equips learners with the essential skills to manage large datasets efficiently and to create visually compelling reports suitable for professional presentations. Whether viewers choose to use standard Excel tools or enhance their workflow with the Pivot Pal add-in, the principles and practices outlined in this session lay the groundwork for further exploration in data analytics. By focusing on clarity, simplicity, and practical application, the video ensures that users from all backgrounds can begin to unlock the full potential of Excel in their academic or professional work.

(The above summary is adapted from: Acampora, 2015)

Essential reading

Ethans (2024). Advantages and Disadvantages of Pie Charts. [online] Available at: https://ethans.co.in/blogs/advantages-and-disadvantages-of-pie-charts/ [Accessed 2 May 2025].

Newcastle University (n.d.). Numeracy, Maths and Statistics - Academic Skills Kit. [online] www.ncl.ac.uk. Available at: https://www.ncl.ac.uk/webtemplate/ask-assets/external/maths-resources/statistics/descriptive-statistics/mean-median-and-mode.html [Accessed 2 May 2025].

Nida, I. (2022). Bar Graph - Definition, Types, Uses, Example Questions. [online] BYJUS. Available at: https://byjus.com/maths/bar-graph/ [Accessed 2 May 2025].

University of San Diego (2020). Data Presentation: 7 Effective Tips. [online] Available at: https://www.sandiego.edu/blogs/business/detail.php?_focus=76019 [Accessed 2 May 2025].

BPP

References

Acampora (2015). *Introduction to Pivot Tables, Charts, and Dashboards in Excel (Part 1). YouTube*. Available at: https://www.youtube.com/watch?v=9NUjHBNWe9M [Accessed 2 May 2025].

Bradburn, S. (2021). *How To Create A Pie Chart In Excel (With Percentages)*. [online] www.youtube.com. Available at: https://www.youtube.com/watch?v=0WNJkBXywMU [Accessed 4 May 2025].

Corporate Finance Institute (2022). *Descriptive statistics*. [online] Corporate Finance Institute. Available at: https://corporatefinanceinstitute.com/resources/data-science/descriptive-statistics/ [Accessed 4 May 2025].

Derek (2022). *Types Of Pie Chart And When To Use Them*. [online] FusionBrew - The FusionCharts Blog. Available at: https://www.fusioncharts.com/blog/types-of-pie-chart-and-when-to-use-them-fusioncharts/ [Accessed 2 May 2025].

Eldridge, S. (2023). *Data analysis*. [online] www.britannica.com. Available at: https://www.britannica.com/science/data-analysis [Accessed 4 May 2025].

Ethans (2024). *Advantages and Disadvantages of Pie Charts*. [online] Available at: https://ethans.co.in/blogs/advantages-and-disadvantages-of-pie-charts/ [Accessed 2 May 2025].

ExcelTutorialsEasyClickAcademy (2019). *How to Make a Bar Graph in Excel*. [online] Available at: https://www.youtube.com/watch?v=fk-iFv5_Rdo [Accessed 1 May 2025].

Fisher, M.J. and Marshall, A.P. (2009). Understanding Descriptive Statistics. *Australian Critical Care*, [online] 22(2), pp.93–97. doi: https://doi.org/10.1016/j.aucc.2008.11.003 [Accessed 4 May 2025].

Kumar, R. (2024). *Why is Data Analysis Important for Businesses*. [online] www.alliant.edu. Available at: https://www.alliant.edu/blog/why-is-data-analysis-important [Accessed 2 May 2025].

Learn Something (2017). *Descriptive Statistics in Excel Using the Data Analysis Tool. YouTube*. Available at: https://www.youtube.com/watch?v=pfYhwy3wN14 [Accessed 1 May 2025].

Lee, J. (2020). *Descriptive Statistics - an overview | ScienceDirect Topics*. [online] www.sciencedirect.com. Available at: https://www.sciencedirect.com/topics/social-sciences/descriptive-statistics [Accessed 2 May 2025].

Newcastle University (n.d.). *Numeracy, Maths and Statistics - Academic Skills Kit*. [online] www.ncl.ac.uk. Available at: https://www.ncl.ac.uk/webtemplate/ask-assets/external/maths-resources/statistics/descriptive-statistics/mean-median-and-mode.html [Accessed 2 May 2025].

Nida, I. (2022). *Bar Graph - Definition, Types, Uses, Example Questions*. [online] BYJUS. Available at: https://byjus.com/maths/bar-graph/ [Accessed 2 May 2025].

Saunders, M., Lewis, P. and Thornhill, A. (2023) *Research methods for business students*. 9th edn. Harlow: Pearson.

Stevens, E. (2023). *The 7 Most Useful Data Analysis Techniques [2021 Guide]*. [online] Available at: https://careerfoundry.com/en/blog/data-analytics/data-analysis-techniques/#cluster [Accessed 2 May 2025].

Sukuma, H. (n.d.). *7 types of bar charts: ABCs and advantages*. [online] Available at: https://inforiver.com/insights/7-types-of-bar-charts-abcs-and-advantages/ [Accessed 2 May 2025].

University of San Diego (2020). *Data Presentation: 7 Effective Tips*. [online] Available at: https://www.sandiego.edu/blogs/business/detail.php?_focus=76019 [Accessed 2 May 2025].