# Section 4: Microsoft Excel – Best Practices That Will Make a Difference

## Lesson 4-36: Using Custom-Sort to Sort Multiple Columns Within a Table

To use custom sort, we select all of the data within the table and then select

**Home > Sort & Filter > Custom Sort**

## Lesson 4-37: Saving Time in Excel and Doing Everything Faster with Excel Shortcuts

**ALT + A + T** – Adds or removes filters.

We can add functions to the **Quick Access Toolbar** by going into the **Options Menu** > **Quick Access Toolbar**

Pressing **ALT** will display shortcut keys in Excel.

## Lesson 4-38: Multiply by 1

**3,0** is interpreted as **text**.

We can find numbers that are interpreted as text by multiplying them by **1**.

This will allow us to easily correct type errors.

* #VALUE!

## Lesson 4-39: Find and Replace – References

To use **Find & Replace** select **Home > Find & Select > Replace.**

* This opens the Replace section of Find & Replace

We can access advances options by selecting **Options.**

* This will allow use to search just the current sheet or the entire workbook.

If you highlight two or more cells, Find & Replace will be used only the selected cells.

If you highlight only a single cell, the Find & Replace will be used on the entire sheet.

To **Find** a sequence of characters in the sheet we can use shortcut **CTRL + F**.

To **Replace** a sequence of characters in the sheet we can use shortcut **CTRL + H**.

* If we enable the **Match entire cell contents** option, then Replace will only replace exact matches.

We can use Replace to remove external sheet references in Excel.

* We usually do this when we import data from a previous version of the current workbook into it.

## Lesson 4-41: Find and Replace: Formatting

We can replace **formatting** as well using Find & Replace.

We first open the Replace section of the Find & Replace menu.

Then we select **Format > Choose Format from Cells**

The formatted cells that much the format and number of cells selected will replaced.

* The text is ignored when finding and replacing formatting.

## Lesson 4-42 – Green References

Green triangles in a cell indicate a potential error/warning.

This is caused by Excel’s **Background Error Checking**

To disable this we go into the Options Menu and de-select

**Options > Formulas > Enable Background Error Checking**

We do this is as the green triangle make’s our spreadsheets look unprofessional.

## Lesson 4-43: Beauty Saving: The Professional Way of Saving Files

Excel automatically “remembers” the last position/cell a file was saved in.

To save files professionally we use **Beauty Saving.**

* This means saving all sheets of a workbook at cell **A1**.

P.S. – Perhaps a Macro can be created for this in the future for personal use.

## Lesson 4-44: The Power of F2

**F2** allows you to edit formulas without using your mouse.

* Automatically opens formula bar in edit mode.
* Also highlights inputs to the formula that are the in the current worksheet.

## Lesson 4-45: Conditional Formatting

**Conditional formatting** is used to communicate trends in data and also focus the attentions of the reader to important values.

This is done via **data bars, color scales, or icon sets**.

To compare **numbers** using conditional formatting we use the **Number** type

If we want to compare **percentiles** for a range of values we use the **Percent** type.

# Section 5: Excel – Beginner, Intermediate, and Advanced Functions

## Lesson 5-46: Key Excel Functions: IF

**IF** checks condition and returns a value if true or other value if false

Syntax: **IF(condition, value\_if\_true, value\_if\_false)**

## Lesson 5-47: Enlarge the Formula Bar

We can **enlarge** the **formula bar** by selecting the **drop-down** arrow next to the formula bar and also by **dragging** the formula area down.

* Either will work.

## Lesson 5-48: IF, SUMIF, SUMIFS

**SUM** sums the values within a given cell range.

Syntax: **SUM(range)**

**SUMIF** checks if criteria is met in a range of cells and sums values in another range where the corresponding range cell met the criteria.

Syntax: **SUMIF(criteria\_range, criteria, sum\_range)**

**SUMIFS** sums the values in the range where the corresponding criteria ranges all meet their criterion.

Syntax: **SUMIFS(sum\_range, sum\_criteria, criteria [,sum\_criteria2, criteria2…])**

Note: The **criteria** for SUMIF and SUMIFS is a string.

## Lesson 5-5: COUNT, COUNTA, COUNTIF, COUNTIFS

**COUNT** counts the number of cells in a range that contain numbers

* It does not count cells that are blank or that contain numbers.

Syntax: **COUNT(range)**

Note: We can start a formula by writing **=**, **+**, or **–**

* If we start with **+**, this is the same as starting with =
* If start with **–** and we type a number next to it, then it will be negated.
  + E.g. - - 9 will be interpreted as =- -9, or = 9

**COUNTA** (pronounced count-uh) counts all cells in a range containing Text, Numbers, Dates, Booleans, Errors, Formula

* It excludes blank cells.
  + Cells that contain formula equaling an empty string ARE counted, however.

Syntax**: COUNTA(range)**

Note: The **criteria** for COUNTIF is a string.

* Extra notes: The **criteria** for **IF** is NOT a string.

**COUNTIF** counts the rows that where the criteria range meets the criteria

Sytnax: **COUNTIF(criteria\_range1, criteria1)**

**COUNTIFS** counts the rows where the criteria ranges **both** meet the criterion.

Syntax: **COUNTIF(criteria\_range1, criteria1, [criteria\_range2, criteria2], …)**

P.S. So, basically COUNTIFS can have the same syntax as COUNTIF and be used interchangeably from COUNTIF

**NOTE: COUNTIF** and **COUNTIFS** can both count text

**NOTE: “<>”** criteria means countcells that are not empty

* Formula returning the empty string is considered not empty.

## Lesson 5-48: AVERAGE, AVERAGEIF, AVERAGEIFS

**AVERAGE** averages the values within a given cell range.

Syntax: **AVERAGE(range)**

**AVERAGEIF** checks if criteria is met in a range of cells and averages values in another range where the corresponding criteria range cell met the criteria.

Syntax: **AVERAGEIF(criteria\_range, criteria, average\_range)**

**AVERAGEIFS** sums the values in the range where the corresponding criteria ranges all meet their criterion.

Syntax: **AVERAGEIFS(average\_range, criteria\_range, criteria [,criteria\_range2, criteria2…])**

Note: The **criteria** for AVERAGE and AVERAGEIF is a string.

## Lesson 5- 52: Key Excel Functions LEFT, RIGHT, MID, UPPER, LOWER

**LEFT** extracts the specified numbers of characters to the left of a string.

Syntax: **LEFT(text, num\_chars)**

**RIGHT** extracts the specified numbers of characters to the right of a string.

Syntax: **RIGHT(text, num\_chars)**

**MID** extracts the specified numbers of characters starting at the specified position of a string.

Syntax: **MID(text, start\_position, num\_chars)**

**UPPER** writes words in uppercase

Syntax: **UPPER(text)**

**LOWER** writes text in lowercase.

Syntax: **LOWER(text)**

**PROPER** writes text with each letter of the first word capitalized.

Syntax: **PROPER(text)**

**CONCATENATE/CONCAT** and **&** concatenate different strings together.

* CONCAT is the same as CONCATENATE **except** it can concatenate a range of strings

Syntax: **CONCATENATE/CONCAT(text1 [,text2]…)**

Syntax: “Rick” & “ “ & “James”

## 5-54: Find the Highest and Lowest Values in a Range MAX & MIN

**MAX** returns the largest value in a list of numbers.

Syntax: **MAX(num1 [, num2]…)**

**MIN** returns the smallest value in a list of numbers.

Syntax: **MIN(num1 [, num2]…)**

## 5-55: = and + are Interchangeable When You Start Typing a Formula

## 5-56: Use ROUND in Your Financial Models

**ROUND** rounds a number to a specified number of digits after a decimal point

Syntax: **ROUND(number, num\_digits)**

* If the number of digits you round to is equal to the number of decimal places, then the function will return the same number.

Note: ROUND does not follow scientific rounding.

## 5-57: Excel's Lookup Functions VLOOKUP & HLOOKUP Made Easy

**VLOOKUP** (or vertical lookup) is used to look up a value in a table based on a lookup value in a column.

Syntax: **VLOOKUP(lookup\_value, table\_array, col\_index, range\_lookup)**

**HLOOKUP** (or vertical lookup) is used to look up a value in a table based on a lookup value in a row.

Syntax: **HLOOKUP(lookup\_value, table\_array, row\_index, range\_lookup)**

**range\_lookup**’s default value is TRUE and looks for an approximate match.

* If TRUE (default value), the row/column must be sorted in ascending order.
* If FALSE, it will look for an exact match and order does not matter.

Which one you use depends on how the table you are searching is pivoted.

If the search criteria is in the column group, you use HLOOKUP

If the search criteria is in the row group, you use VLOOKUP

## 5-58: INDEX, MATCH, and Their Combination - The Perfect Substitute of VLOOKUP

The **INDEX** function returns the value in a table array located in the specified coordinates.

Syntax: **INDEX(table\_array, row\_num [, col\_num])**

The **MATCH** function finds the index of a value in a row or column

Syntax: **MATCH( lookup\_value, lookup\_array [,match\_type])**

* **0** – exact match
* **1** – Less than, finds the nearest value less than or equal to the lookup value
* **-1** – Greater than, finds the nearest value less than or equal to the lookup value

**INDEX(MATCH)**

Is used as a replacement for VLOOKUP and HLOOKUP because the index column and index row can be behind or in front of the lookup column.

So if we cut and past the look up column or row to the front or back or top or bottom, the out put of index/match will stay the same.

**NOTE:** Excel treats cutting and pasting cells as moving the cells, so if do this formulas that use these cells will update even if they are using absolute references to the moved cells.

**NOTE:** In XLOOKUP, the lookup array and return array have to be the same shape (either both row or column arrays), while in INDEX-MATCHthe lookup array and return array don’t have to be the same shape, one array can be a row and the other array can be a column.

## Lesson 5-59: XLOOKUP

**XLOOKUP** is used to lookup values either vertically or horizontally.

Syntax: **XLOOKUP(lookup\_value, lookup\_array, return\_array)**

**Note:** the default match type is **EXACT** match for XLOOKUP.

**NOTE:** In XLOOKUP, the lookup array and return array have to be the same shape (either both row or column arrays), while in INDEX-MATCHthe lookup array and return array don’t have to be the same shape, one array can be a row and the other array can be a column.

## Lesson 5- 60: Using Excel's IFERROR Function to Trap Spreadsheet Errors

**IFERROR** returns a replacement expression for another expression if it results in an error.

Syntax: **IFERROR**(**expression, replacement\_expression)**

## Lesson 5- 61: A Useful Tool for Financial Analysis - The RANK Function

**RANK** is used to assign ranks to an array list (can be vertical or horizontal).

* If there are ties values get the same rank, but ranks are skipped for subsequent values.

Syntax: **RANK(number, ref\_list [,order])**

* The default ranking order is **descending**, meaning higher values get better ranks.
  + E.g. In a list ranging from 1-100, 100 would be 1.

**RANK.EQ** has replaced RANK in EXCEL 2010 and above. Has the same function as RANK, but is recommended by Microsoft for its clear naming convention.

## Lesson 5- 62: Create Flexible Financial Models with CHOOSE

The **CHOOSE** function selects the number in specified position from a list of numbers.

Syntax: **CHOOSE(position, number\_position1 [, number\_position2, number\_position3]…)**

Can be used when you want to change a value that is display in a cell dynamically if the **position** parameter is a referenced cell in **CHOOSE** that can changed dynamically in the spreadsheet.

**Sensitivity Analysis** in finance the practice of evaluating how changes in an independent variable or variables affect the output of a dependent variable.

* Also known as **What-If Analysis** or **Simulation Analysis**.
* Used in financial modeling to determine/predict outcomes when different assumptions are applied.
* Done using the **What-If Analysis** feature in Excel
  + **Goal Seek**
  + **Data Tables**

## Lesson 5- 63. Goal Seek Will Help You Find the Result You Are Looking For

**Goal Seek** is a **What-if-Analysis** feature in Excel.

Goal Seek allows you to evaluate what input is needed in a formula to get the result you want.

* The feature asks you what your desired value is in a particular cell and then asks you to pick a related cell to change in order to get that value.
  + The cell must be related or the feature will not work

Goal Seek useful when dealing with complicated formulas.

To access Goal Seek, go to:

**Data > What-If-Analysis > Goal Seek**

So Overall Goal Seek can be said to be used to find a missing unknown value in order to get a desired value.

## Lesson 5-64. Perform Sensitivity Analysis with Excel's Data Tables

**Data tables** allow you to perform **Sensitivity Analysis**. They allow you see the outcome of a formula for different values of at most two of (independent) variables/parameters.

**Data > What-If-Analysis > Data Tables**

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**A screenshot of a computer

AI-generated content may be incorrect.**

## Lesson 5-65: Discounting Cash Flows in Microsoft Excel

**NPV (Net Present Value)** is the sum of discounted cashflows minus the initial investment.

* A discounted cashflow is the present value of future expected cashflows.
  + In the real world, the value of money in the future is not the same as it is today.
  + Money today is **more valuable** than money tomorrow.
  + Money is discount using its **discount rate**, it represents the time value of money.
    - Discount rate is the rate at which we discount money to calculate its present value
      * Accounts for opportunity cost and inflation.
* Used to determine if a project will profitable over its lifespan.

Use Case: Determining if investing money in a bank is a sound investment.

**Net Present Value = PV(1) + … + PV(n) – Initial Investment**

* If NPV **> 0**, the project is feasible.

**PV = (FV at year n) / (1+r)^t**

* **FV** means future value.
* **Initial investment = PV(0)**, divides initial investment by 1.
* **r** is the **discount rate**. This represents the time value of money.

The **NPV** function in excel calculates the present values of the projected cashflows by discounting them and then sums them, it should not include the initial investment.

Syntax: **NPV(discount\_rate, cashflows)**

The **SUM** function sums a list of values.

Syntax: **SUM(value(s)1 [, values(s)2])…)**

## Lesson 6-66: Calculating Internal Rate of Return (IRR) in Excel

**IRR** or **Internal Rate of Return** is a discount rate used for measuring the profitability of a potential investment.

* IRR is the discount rate that makes NPV = 0.

The **IRR** function determines the IRR.

Syntax: **IRR(values)**

* The first value must be the initial investment, the subsequent values must be the future values of the cash flows.

## Lesson 6-67: Using the PMT Function to Create a Complete Loan

**PMT()**, as in **payment**, calculates the constant monthly payment that is necessary to extinguish a loan in ‘n’ periods.

Syntax: **PMT(period\_rate, number\_of\_periods, principal\_amount)**

* If the interest is compounded monthly, the rate would be divided by 12 and the number of periods would be the number of years times 12.

We can use the PMT function to create a table showing the different amount of interest and principal payments we make over the lifetime of the loan.

## Lesson 6-68: Date Functions in Excel

Dates in Excel are just **numbers**. The **base date** is **12/31/1899** and isdate **number** **0**.

* Represented as **1/0/1900**

**DAY** extracts the day number from a date.

Syntax: **DAY(date)**

**MONTH** extracts the month number from a date.

Syntax: **MONTH(date)**

**YEAR** extracts the year number from a date.

Syntax: **YEAR(date)**

Subtracting dates will return the difference in days between them.

**EOMONTH** gives the last date of the month given an offset.

* e.g. **0** is the current month
* e.g. **1** is the next month
* e.g. **-1** is the previous month

Syntax: **EOMONTH(start\_date)**

**EDATE** returns the exact date n number of months before or after the start date.

Syntax: **EDATE(start\_date, months)**

# Section 7: Microsoft Excel – Practical Exercise: Build a P&L from Scratch

A **P&L statement** is a **profit and loss statement**. It is a report summarizing a company’s revenues, expenses, and costs providing a clear view of a company’s profitability over a period such as month, quarter, or year.

An **expense** is a **cost** incurred by a business to **generate revenue**

Types of expenses are:

* Cogs
* Opex
  + Depreciation and Amortization
    - Special kind of Opex
* Non-Opex
  + Interests
  + Losess
  + Lawsuits

Every company has a **P&L** statement **by law**.

Required information includes:

* Revenue
* Expenses
* Taxes
* Net income

A P&L’s clear components are:

* **Revenue**
  + Income generated from sale of goods/services from core business operations.
* **Cost of goods sold (Cogs)**
  + Cogs Direct costs attributable to the production of goods sold
* (Subtotal of Gross Profit)
  + Not legally required, but almost always shown for analysis
  + **Gross Profit = Revenue from sales of goods/services from core business operations – Cogs**
* **Operating expenses**
  + Costs incurred during normal business hours; costs directly related to running the core business
    - Does not include interest income/expenses or gains/losses
* **Other income**
  + **EBITDA (optional)** – Earning before interest, taxes, depreciation, amortization.
    - Profit from **core operations** before non-cash charges and financing costs.
      * **Non-operating income** would not be included.
    - **EBITDA = Revenue – COGS – Operating Expenses** (OPEX) (except depreciation/amortization)
      * **Depreciation and Amortization are operating expenses**
  + **EBIT (optional)** – Earnings before interest, taxes.
    - Also known as **operating income/profit**
      * It is the profit from core operations before paying interest and taxes
    - **EBIT/Operating Profit = Gross Profit (Revenue – Cogs) – Operating Expenses**
  + **EBT (optional)** –Earnings before tax.
    - Also known as **pre-tax profit**
      * It is the profit before paying taxes
    - **EBT = EBIT – Interest Expense + Interest Income**
* **Non-operating income/expenses**
  + **Interest income** – from investment, deposits.
  + **Interest expenses –** from loans, debt.
  + **Gains or losses** – from selling an asset, currency exchange.
    - If you sell an asset for higher than its book value, then it’s a gain.
    - If you sell an asset for less than its book value, then it’s a loss
* **Taxes** – Income tax expense
* **Net Income**
  + Synonymous with **earnings**.
  + Profit and Income are used interchangeably in Finance/Accounting.
    - Income is more formal and usually used in financial reports.
  + The final profit after all expenses have been deducted from revenue
  + **Net Income = Revenue – Cogs – OPEX – Interest Expenses + Interest Income - Taxes**
    - **Interest** is not an operating expense

A **P&L** may also include KPIs such as **GM%, EBITDA%, EBIT%**

**Gross Income** may be included in P&L as a subtotal

* **Gross Income = Revenue – Cogs**

Margins can also be included in P&L:

* **Gross Margin = (Gross Income / Revenue) \* 100**
* **(Net) Profit Margin = (Net Income / Revenue) \* 100**
* **EBITD Margin % = (EBITDA / Revenue) \* 100**
* **EBIT Margin % = (EBIT / Revenue) \* 100**

Year-over-Year % changes can also be included.

**Revenue** is the total money a company earns from its core business operations **before any costs or expenses**.

**Income** is an umbrella term meaning revenue **after certain costs or expenses are deducted.**

* There are different kinds of income:
  + Net income
  + Gross income
  + EBITDA
  + EBIT
  + EBT

“**Earnings**” is a synonym for **net income** in accounting.

Additionally, every P&L requires it shows total revenues, total expenses, and net profit.

A holding company has its own standalone P&L and one for each of its subsidiaries.

A P&L **extraction** is a subset of a P&L typically for reporting purposes.

## Lesson 7-71: Understand Your Data Source Before You Start Working on It

A **holding company** is a company that **owns controlling shares or stakes in other companies** (called subsidiaries) but usually **does not produce goods or services itself**.

* Its main purpose is to **control, manage, and protect investments** in those subsidiaries.
* **Partner company** is another name for a **subsidiary**.

A P&L account is a **profit and loss** account for a company. There is a P&L account for different revenue and expenditure streams.

* Each P&L account has an **account number**.
  + An P&L account can contain P&L information for different companies.
    - These different companies will share the same **P&L account** and **Account Number**.
* We should always check if **account numbers** are **homogenous** across different **FYs** (fiscal years).

A **financial statement** consolidates allt profit and loss accounts for a given company.

**Total** is the overall amount registered for a given type of P&L account.

In a **P&L extraction**, **revenues** have a **negative** sign, and **costs** have a **positive** sign.

A P&L statement shows net income/loss and its breakdown, also why it’s called an “income statement”

* Broken down by a period such as month, quarter, or year.
* It shows:
  + The net income/loss
  + Revenue
  + Cogs
  + Taxes
  + Operating expenses (rent, salaries, marketing, depreciation)
  + Non-operating items (interest, other income/expenses)
* It is used by management to see if operations are efficient.
  + Used by investors to judge profitability and growth potential.
  + Banks/Creditors to assess ability to repay loans.
  + Regulator to ensure compliance with accounting standards

A **consolidated income statement** is an income statement showing the performance of different subsidiaries.

A comparative **consolidated income statement** is an income statement showing the performance of different subsidiaries across different periods.

A P&L statement of the **three primary** **financial statements**, including:

* **P&L Statement**
* **Balance Sheet**
* **Cash Flow Statement**

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## Lesson 7-72. Ordering the Source Worksheet

The **ALT+H+A+L** shortcut left aligns text and numbers.

* If do it twice it keeps the text left-aligned, but the numbers will become right-aligned.

The **ALT+A+T** filter will add filters to your columns.

* It is good practice to have filters **on** with tabular data.

The **CTRL+-** shortcut will delete highlighted rows.

## Lesson 7-73. Create a Code: The Best Way to Organize your Data and Work Efficiently with It

A P&L account can include more than one partner company.

To identify the line items related to a particular partner company we can create a P&L code by concatenating the P&L account number with the partner company number

## Lesson 7- 74: Learn How to Create a Database

A **database** is the consolidation of the different P&L account and their companies from different years and different sheets into a single sheet.

* Each P&L account-company combination should be included only once.

We can remove duplicate codes for account-company combos by using the **Remove Duplicates** functionality

**Data > Remove Duplicates**

## Lesson 7- 75: Using Lookup Functions (VLOOKUP) to Fill the Database

If we can’t use VLOOKUP because of the position of the column in a table array, we can always insert new column and cut and paste to move the column to the front of the array.

Generally speaking, when using the VLOOKUP the source table column and row are fixed.

When we reference cells or cell ranges in other sheets in the same workbook, we precede the reference with two single quotes and the sheet name in between, followed by an exclamation point.

* E.g. **‘sheet\_name’!A1:B4**

## Lesson 7- 76: Using SUMIF to Complete the Database Sheet

In practice, revenue is sometimes displayed as a negative value while cost is a positive value.

The Net income/(loss) line item for a P&L statement is the sum of all the other line items.

* The difference between the net income and sum of all the other items should be 0 if our calculations are correct.
  + In Excel, we can negate the Net Income/(loss) line item value and then find the sum of all the amounts. If our calculations are correct, the sum of amounts for the column should be 0.

If sum is equal to 0, then the database is ready for use.

**Note:** When selecting a range Excel pre-sums all the values in the range.

## Lesson 7- 77: Why Net Income Check Should be 0?

First we start with the assumption that the extracted ERP (Enterprise Resource Planning) system data (source date) is correct.

The ERP system calculate the Net Income/loss for each year

Net Income/Net Profit = Revenue – Expenses (Taxes, Cogs, Interest)

* This is what a P&L intends to show and breakdown, also why its called an “income statement”
  + It shows whether the company made a profit or a loss during a specific period (month, quarter, year)
  + It shows:
    - The net income/loss
    - Revenue
    - Cogs
    - Taxes
    - Operating expenses (rent, salaries, marketing, depreciation)
    - Non-operating items (interest, other income/expenses)

All items in a P&L statement are either revenues or costs, besides the net income.

* Therefore, theirs some have to be equal to 0.

## Lesson 7-78: Using INDEX & MATCH as a Substitute for VLOOKUP

INDEX & MATCH is like VLOOKUP except it allows for the lookup column to be on the right or the bottom.

* It even allows the lookup array and return array to be different shapes.

## Lesson 7-79: XLOOKUP As a Replacement for VLOOKUP and INDEX&MATCH

We can use XLOOKUP as a substitute for VLOOKUP and INDEX&MATCH.

The replacement lookup column here does not have to be on the left or the top of the lookup array.

However, the lookup and return array have to be the same shape.

## Lesson 7-80: The Mapping Exercise

We often assign **macro categories** to different P&L accounts in our consolidated P& to summarize them more efficiently.

## Lesson 7-81: Mapping the Rows in the Database Sheet

A **transaction** is a transfer of wealth

* This includes:
  + Revenues
  + Costs

A **ledger** is a **book** or **digital record** that collects and organizes all financial transactions of a business.

A **general ledger** contains all summary accounts for a company; these are called **general ledger accounts**.

A **general ledger** **account** summarizes multiple **related** **subledgers**.

A **subledger** contains **detailed/individual accounts** that feed into a GL account.

A General ledger can have **multiple** general ledger and subledger accounts.

* It can even have multiple subledgers of the same type if it is a holding company’s.
  + Note: A holding company and a subsidiary each maintain their own general ledger.

For example:

General Ledger Account: “Personnel Expenses” – Total: $50,000

Subledger: Wages and Salaries – Total: $45,000

* Employee 1 Account: Salary: $10,000
* Employee 2 Account: Salary: $10,000
* Employee 3 Account: Salary: $15,000

Subledger: Benefits – Total: $10,000

Subledger: Bonuses – Total: $5,000

Subledger: Severance and indemnity – Total: $10,000

Example 2:

GL Account: Taxes

* Subledger 1: Federal taxes
* Subledger 2: State taxes
* Subledger 3: Regional taxes
* Subledger 4: County taxes
* Etc.

A software company has different revenues and costs.

For example, a software company may have:

Revenues:

* Software sales
* Support services
* License fees
* Etc.

Costs:

* Personnel expenses
* Social securities
* Interest expenses
* Travel expenses
* Insurance costs
* D&A
* Etc.

Mapping Exercise:  
Please Ignore:

* Total Revenues
* Gross Margin
* EBITDA (Earnings before interest, taxes, depreciation, amortization)
* EBIT
* EBIT

These are subtotals of the items

## Lesson 7- 82. Building the Structure of the P&L Sheet

A general ledger contains all of a company’s financial transactions from revenue and expense accounts.

* The general ledger cans span a company’s entire life or a multiple years.
* It is a company’s **master diary of money**.

A P&L statement contains extractions from general ledger revenue and expense accounts for a specific period in time to show its net profit or net loss.

* A P&L does not extract subledger account information.

**Revenue** is the money a company earns from its core business activities before expenses.

* All the money coming in

**Income** is a company’s revenue after expenses.

* What’s left after all expenses go out

A **database** in Excel for our P&L statement would contain all of general ledger extractions.

We organize a P&L statement accordingly:

1. Revenues
   1. This section is composed of general ledger accounts related to revenues.
      1. Net sales
      2. Other revenues
      3. Recharges
2. Total Revenues
   1. Subtotal calculated manually
3. Direct costs
   1. A general ledger account
4. Gross margin
   1. Subtotal calculated manually
   2. The **difference** between **total revenu**e and **direct costs** is the **gross margin**.
5. Operating Expenses – not variable in nature.
   1. Other operating expenses
      1. A general ledger account
   2. Personnel Expenses
   3. Leasing
   4. Services
   5. Travel costs
   6. Other income
   7. Capitalized costs
6. EBITDA
   1. Subtotal calculated manually
   2. Earnings before interests, taxes, depreciation, and amortization.
7. D&A
   1. A general ledger account
   2. Depreciation and amortization
8. EBIT
   1. Subtotal calculated manually
9. Financial items
   1. A general ledger account
10. Extraordinary items
    1. A general ledger account
11. EBT
    1. Subtotal calculated manually
       1. EBT = EBIT – Interest Expense + Interest Income
    2. Earnings before taxes
12. Taxes
    1. A general ledger account
13. Net Income
    1. Subtotal calculated manually

These categories are then populated for the periods included in the P&L statement.

## Lesson 7- 83 A Practical Example of Professional Formatting in Excel

On the row above our revenues section, we will include the currency and its measurement and the periods under consideration

* Our case study is using euros measured in millions
* The periods are FY16, FY17, FY18

Formatting the data makes the content easy to understand.

The formatting plays as big a role as the content itself.

We should give the title and column header a different formatting from the data.

* Our case study uses dark blue color for the title and column header and black for the data.
* The title and column header are bold
* It uses a dark blue bottom border for the column headers.

The subtotals have different formatting as well.

* We separate them with a grey border.

We also give EBITDA a dark blue background and white font because it is an important metric.

And we also give net income a dark blue font color.

We also must right align numbers, include the column header titles FY16, FY17, and FY18.

## Lesson 7-84: Populating the P&L Sheet with SUMIF

In accounting 0 is displayed as single dash, ‘-‘.

* Happens when we use the accounting format for numbers.

We use SUMIF in Excel to sum up the category amounts from each fiscal year.

To check if our final net profit sum for P&L is correct, we check the difference between our calculated net profit and the net profit from the GL subledger extractions in our database.

## Lesson 7-85: Learn How to Find Mistakes with COUNTIF

If our check between the difference of our calculated net income and the database net income had not been 0, we could use the COUNTIF function to check for errors.

COUNTIF is used to check if a specific value is in a range of cells.

If the difference between our calculated net income and the net income in the database is not 0, we can use COUNTIF in the database sheet and cross check it with the P&L sheet to see if its included. If not, it will have a count of 0, if it is then it will have a count of 1.

* We can use this information to modify our database so the specific line item will be included in the P&L.

## Lesson 7-86: Calculating Growth Rates in Excel

**Year-over-year percentage change** between **fiscal year amounts** and **financial (profitability) ratios** on **total revenue amounts** are useful tools that facilitate the dynamics of a given business.

* We can add them to custom P&L statement.
  + In our case the P&L is also comparative
* % change =
  + [(New value / old value) -1] \* 100
  + Or [(new value – old value)/old value] \* 100

We can copy and paste formatting by using paste special-formats.

* **CTRL+ALT+V**

It is good practice to differentiate percent variations from amounts by displaying them in a smaller font.

We calculate **financial /profitability ratios** for different **fiscal years**.

Some **profitability ratios** are:

* **Gross margin %** - **Gross Margin / Total Revenues**
* **EBITDA % = EBITDA / Total Revenues**
* **EBIT % = EBIT / Total Revenues**

# Section 8: Practical Exercise - SUMIFS

## Section 8-87: Practical Exercises – SUMIFS

SUMIFS is used to sum data in a range based on multiple criteria.

Usually used when creating Pivot Table like charts with aggregations based on multiple categories.

# Section 9: Building Professional Charts in Excel

## Lesson 8-88: Introduction to Excel Charts

Excel 2016 New Charts:

* Waterfall
* Treemap
* Sunburst
* Box & Whisker
* Histograms
* Combo Charts

We will not focus on sunburst, box & whisker, and histograms as they are out-of-scope for this course.

## Lesson 8-89: Beginner Guide to Inserting Charts in Excel

To create a chart we highlight the data we want in the chart, then select

**Data > Recommended charts**

In the charts section of the data tab.

## Lesson 9-90: Modifying Excel Charts – The Easy Way

We can use the **Chart Design** tab to design our charts.

**Chart Design > Switch row/column** will switch the column and row values that are plotted.

**Chart Design > Select data**  allows you to change the selected data for the chart and its labels.

* Can also be accessed by right-clicking the chart

## Lesson 9-91: Making Your Excel Charts Sexier

The format axis menu lets you modify the minimum and maximum values of a chart as well as its units (the step size between tick marks).

## Lesson 9-92: Creating a Bridge Chart in Excel 2016 – As easy as it gets

A **bridge/waterfall** chart shows an initial value, final value, and a series of intermediate positive or negative values.

To insert we create a table array with the first row containing the initial value, the last row containing the final value, and the rows in between containing intermediate values.

We then insert by selecting:

**Insert > Waterfall Chart**

We then select the last value in the chart and format it as the total.

## Lesson 9-93: New Ways to Visualize Your Data – Treemap Charts

Treemap charts allow us to visualize the relative size of hierarchical data using squares.

**Insert > Treemap Chart**

## Lesson 9-94: How to Represent Trends with Sparklines

A **sparkline** is a miniature chart in a cell that helps you spot **trends** in the data.

* These cells are typically put in a separate column next to the data it is describing

We can copy and paste sparklines and it will display the sparkline for the new adjacent data.

To delete sparklines we must select the **clear selected sparklines** command in the **Sparkline** tab.

Sparklines are useful to be an **instant** idea of the data you’re working with.

# Section 10: Microsoft Excel – Creating Complete Professional Charts from Scratch

## Lesson 10-96: Stack Column Chart with a Secondary Axis

**Net sales** is the first line of a P&L statement.

**Net sales** = **Gross sales – Returns – Allowances – Discounts**

* First line of P&L statement
* What you keep after customer returns and discounts

**Gross sales** = **Total units sold \* Price per unit**

We can insert a stacked column chart by selecting table array and then selecting

**Insert > Stacked Column Chart**

**Note: Switch Row/Column** is good to use when you’re visualizing data from a two-way table.

* We can use it with stacked column charts to change what is being stacked and what is a category on the axis.

If we select a part of the stack we can add a secondary axis for that part and then convert it to a line to create a combo chart.

* To add a secondary axis we right click the chart and select **format data series > Plot series on secondary axis**
* We **right click it > change series chart type**

This combination of chart types is called a **combo chart**.

Useful for seeing the relationship of related metrics and KPIs such as **revenue** and **gross margin**.

## Lesson 10-97: Doughnut Chart

**Insert > Doughnut Chart**

## Lesson 10-98: Area Chart

**Insert > Area Chart**

## Lesson 10-99: Bridge Chart

A **bridge chart** is also known as a **waterfall chart**

It is used to show the how an initial value arrived at its final value using intermediary steps.

# Section 11: Microsoft Excel – Working with Pivot Tables in Excel

## Lesson 11-100: Pivot Tables – Excel’s Dynamic Interactive Tables

**A Pivot Table** is used to calculate summary statistics from data in table array.

In order to create a pivot table we highlight the entire table including the column headers and select:

**Insert > Pivot Table**

## Lesson 11-101: Design the Layout and Format of Your Pivot Tables

We can modify Pivot Tables in the Design tab.

## Lesson 11-102: Additional Techniques That Will Ease Your Work With Pivot Tables

The values in a Pivot Table do **not** automatically update. We must right-click the able and select **refresh**.

We can change the displayed name for the value field by going into the value field settings.

We can change how data is summarized by modifying the hierarchy of row and column groups.

## Lesson 11-103: GETPIVOTDATA

**GETPIVOTDATA** is used to get data from a pivot table in a cell.

Syntax: **GETPIVOTDATA(data\_field, pivot\_table, field1, value1 [,field2, value2]…)**

* Will work if you change hierarchy order, but not if you remove a field included in the formula.

The **value** for the **field** can be a cell reference.

## Lesson 11-103: Pivot Table Slicers

**Slicers** are Pivot Table filters that allow you to select the data you want to see in a pivot table.

To add a slicer to pivot table we select the pivot table and then select:

**Insert > Slicer**

We can select fields to be included in slicers. If we select more than field, there will be more than one slicer generated.

To change the name of a slicer we right-click it and select **Slicer Settings**.

## Section 12: Pivot Tables & Slicer – World Class Financial Reporting

## Lesson 12-108: Introduction to the Case Study

**FMCG** refers to the **fast-moving consumer goods** industry.

The **fast-moving consumer goods** industry involves the production and sales of non-durable goods such as soft drink, toiletries, processed foods, and other consumable goods.

* It is known for its **high volumes**, **relatively low margins**, and **large product portfolios**.

## Lesson 12-109: Working with an SAP Extraction Data

**ERP (Enterprise Resource Planning) systems** are integrated software solutions used by companies to collect, store, and manage data from business activities.

The two most popular ERP system providers are Oracle and **SAP**.

SAP’s **BusinessObjects** is a tool that allows you to extract data that has been stored in the system.

The data is then downloaded and used Excel by the firm’s financial analysts.

**Volume** is the **total units sold.**

**Net Sales = Gross Sales – (Sales Returns – Sales Allowances – Sales Discounts)**

* **Gross Sales = Units \* Price**
* **Sales Returns = Value of goods returned by customers**
* **Sales Allowances = Price reductions given to customers for issues like defects or delays.**
* **Sales Discounts = Early payment or promotional discounts offered.**

**Net sales** is also known as **revenue**.

**Note:** In finance **gross** means total value **before deductions**.

**Note:** In finance **net** means total value **after deductions**.

**Distribution cost** is the cost to distribute an item.

**Warehousing cost** is the cost for keeping an item in company’s warehousing facilities.

## Lesson 12-10: Preliminary Mapping of the Data Extraction:

We can extract characters from a string using the **LEFT** and **RIGHT** functions.

Syntax: LEFT(string, num\_chars)

Syntax: RIGHT(string, num\_chars)

## Lesson 12-11: Creating an Output Structure of the FMCG Model

A **financial model** is a structured (usually spreadsheet-based) representation of a company’s financial performance. It is built to **analyze, forecast, and support decision-making**.

The major one we’ve discussed in this course is the **3-statement model**.

**Full delivered margin** is a **profitability metric** used in the FMCG industry to measure how much a firm makes when taking into account Cogs, warehousing, and distribution.

**Full delivered margin** is the revenue from a product/customer **minus** all direct and indirect costs of making, selling, and delivering it, it includes:

* Cogs
* Distribution
* Warehousing
* Returns
* Commissions
* Etc.

## Lesson 12-13: Inserting Formulas and Automating Calculations

FDM % = FDM/Revenue \* 100

## Lesson 12-14: Creating a Master Pivot Table: The Main Data Source for FMCG Report

## Lesson 12-15: Extracting Data from the Master Pivot Table

We can use the GETPIVOTDATA function to dynamically extract data from a master pivot table.

We can change input dynamically when copying & pasting by using cell references.

**Note**: Changing the number format of data in Excel does not change the underlying data type.

* E.g. Changing the number format of 2015 to **text** does not change the data type, it is still a number
* E.g. Likewise, changing the number format of “2015” to **number** does not change the data type, it is still a string.

To type a number as a string we must set the cell format to **Text** before typing.

Or

We can precede our text with **single apostrophe “’”**, this will force entire cell contents to interpreted as a string, including spaces numbers, etc.

Or

We can use the TEXT function to convert values to the **Text** data type.

## Lesson 12-118: Combining Slicers and GETPIVOTDATA

If we have a table that uses GETPIVOTDATA, the we can use slicers to interactively filter the table.

First we create slicers on the pivot table, then we can cut and paste them into the report table sheet.

* These slicers can now be used to interactively filter the table.

## Lesson 12-120: This is How the Report Can be Used in Practice by High Level Executives

Slicer let us slice metrics by different components.

For example, sales by different brands, clients, client types.

This allows us to tell more effective stories.

For example,

Our decrease in sales is mainly driven by product A, the main drivers of the sales decrease for product A are companies B and C, etc.