

Essential Excel for Business Analysts and Consultants?

Practical guide

Excel is a powerful yet a bit overwhelming tool that every business analyst and consultant will use extensively



**>300 built-in
functions**

Pivot Tables

**Built-in
functionalities**

Visual Basic

**Analytical Tool
Pack**

I will show you what you should know to be effective using 80/20 rule. You will learn also how to use them effectively



**~ 30 built-in
functions**

**Essential Pivot
Tables**

**Essential built-
in
functionalities**

**Essential
Visual Basics**

**Essential
Analytical Tool
Pack**

If you follow my suggestion you will significantly improve your speed of work in analyzing data with Excel

- Improved speed of working

10 x

- You will manage to reuse significant share of your Excel for new purposes

40%

- You can master or need things in short time

1 week

This presentation will show you the **most useful side of Excel** that you need **to be a great and efficient** Business Analyst or Consultant. I will try to achieve it in shortest possible time

What I will show in this presentation is a part of extensive on-line course where I show you in details how to do it in Excel



**Essential Excel for Business Analysts
and Consultants?**

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I will talk about 8 different things in this presentation

Merging data from
different sources

Cleaning and unifying
data

IF and their
alternatives

Other useful
functions and
functionalities

Pivot Tables

Being faster with
Excel

Example of analysis

Elements of Visual
Basic

Below you can find the list of functions and functionalities that you should master

Basic functions

- SUMIF / SUMIFS
- COUNTIF / COUNTIFS
- HLOOKUP
- VLOOKUP
- MATCH
- SUMPRODUCT
- IF
- AND / OR
- IFERROR
- AVERAGEIF
- LEFT / RIGHT / MID
- FIND
- CONCATENATE
- YEAR / MONTH / DAY
- ROUND / ROUNDUP / ROUNDDOWN
- TODAY
- VALUE
- WEEKDAY

Financial / Mathematical

- RAND / RANDBETWEEN
- MOD
- NPV
- IRR
- ABS
- MAX / MIN
- CORREL

Others

- Pivot
- Slicer
- Relative addresses
- Formats
- Hyperlink
- Remove Duplicates
- Filters
- Sorting
- Data Validation
- Trace Dependents / Precedent
- Analysis Tool Pack

**Merging data from
different sources**

**Cleaning and unifying
data**

**IF and their
alternatives**

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functionalities**

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**Being faster with
Excel**

Example of analysis

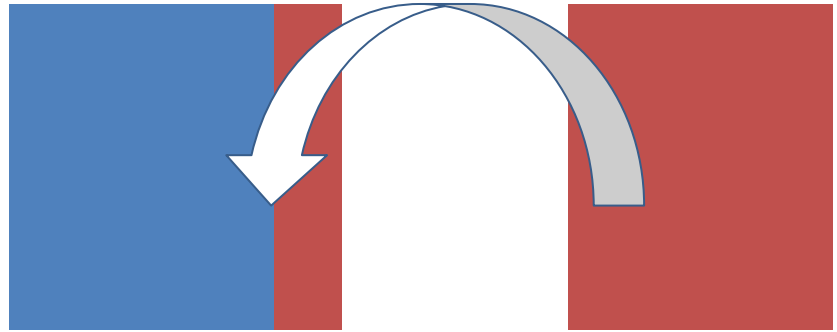
**Elements of Visual
Basic**

How to merge data from different sources

You quite often have want to merge 2 data set or on the basis of one data set assign categories to a second one

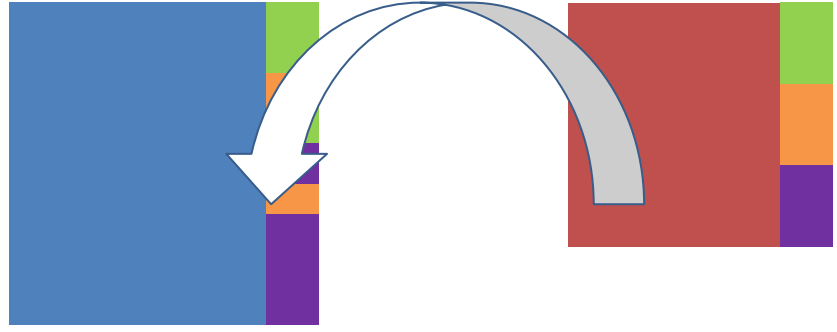
1

Merging data



2

Assigning categories



In most cases you can merge data from 2 different data sets (sheets) using VLOOKUP in combination with other function

VLOOKUP
Exact match

- Assigning 1-1. For example using this you can assign to specific car his brand (from other table) on the basis of the registration number as ID)

VLOOKUP
Approximate match

- Assigning on the basis of interval condition. For example using this you can assign to all shops between 0 and 500 sq m of space the category *small*

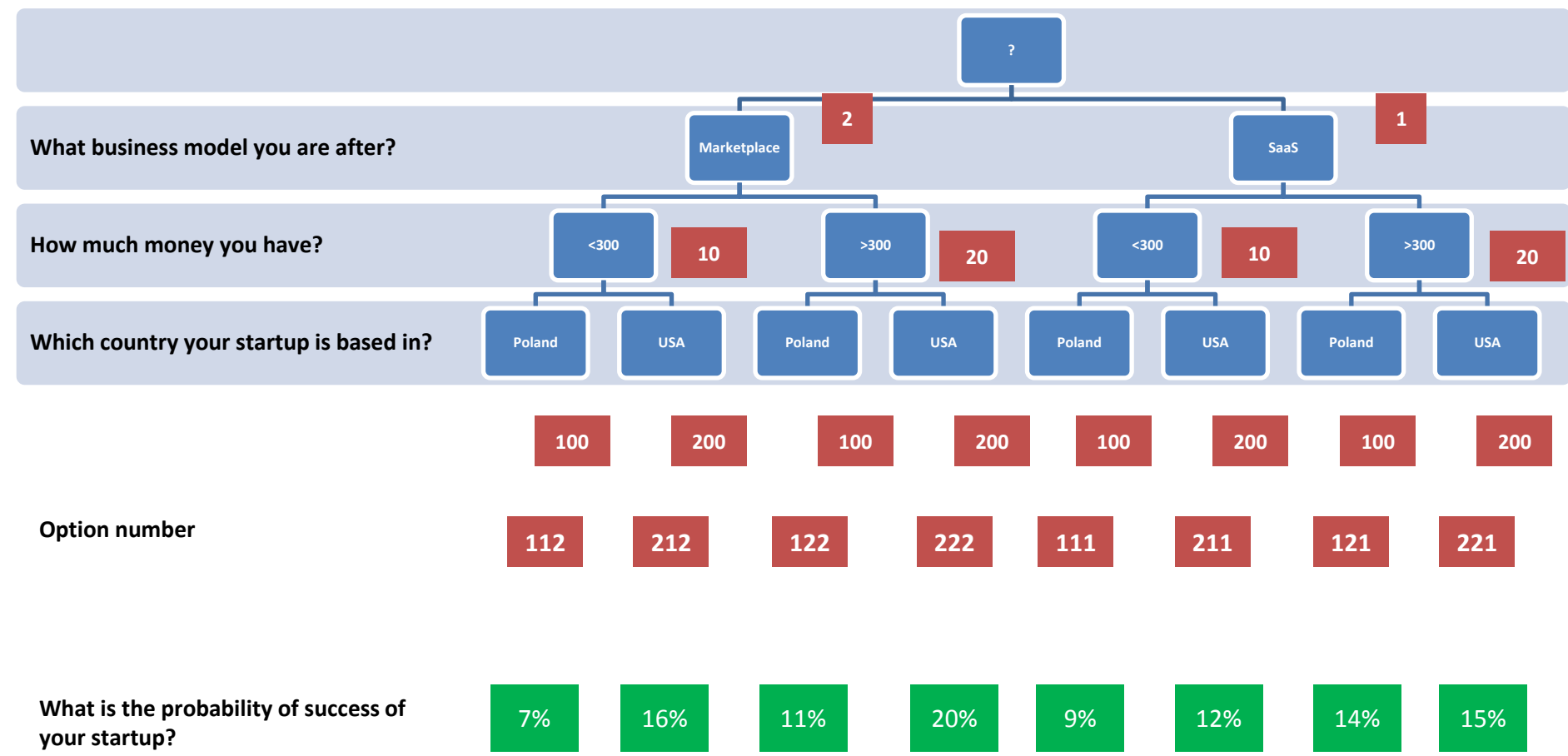
VLOOKUP
+ MATCH

VLOOKUP
+ HLOOKUP

VLOOKUP
+ a list of all options

- Assigning categories to data set on the bases of 2 criteria. For example you can use it to show the probability of startup failing depending on money invested and the business model they are using

For more criteria than 2 you have to create first a list of all possible options and then assign to them the values. Below example for estimating the probability of success for a startup



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How to clean and unify data?

As a business analyst or consultant you will quite often get data that lack consistency. There are number of problems you can face with cleaning data. Below the most often occurring examples

Lack of assigned categories

▪ Warsaw Shopping Mall ➔ ▪ Warsaw

Different Names

▪ Warsaw Shopping Mall & ▪ Warsaw Shop Mall

Different Units

▪ 100 000 USD & [‘000 USD] ▪ 100

Joining 2 data points into 1

▪ Asen ▪ Gyczew ➔ ▪ Asen Gyczew

Dividing 1 data points into 2

▪ Asen Gyczew ➔ ▪ Asen ▪ Gyczew

To tackle low quality and lack of consistency of data you have to use a bunch of functions that operate on text as well as some built-in functionalities of Excel that will make the cleaning process easier

SEARCH

LEN

Filters

LEFT

CONCATENATE

Ctrl + H

RIGHT

IFERROR

Remove
duplicates

MID

VLOOKUP

Pivot Table

You should first make sure that the data you are working on are consistent. This will help you speed up analyzes and make sure that you are recommending the right actions

Get data

Clean and unify
data

Check and provide
data consistency

Analyze data

Draw conclusions

Form
recommendations

- 80% of the workload

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How NOT to use IF function

IF function is universal yet it is too complicated and time consuming to be used in many situations

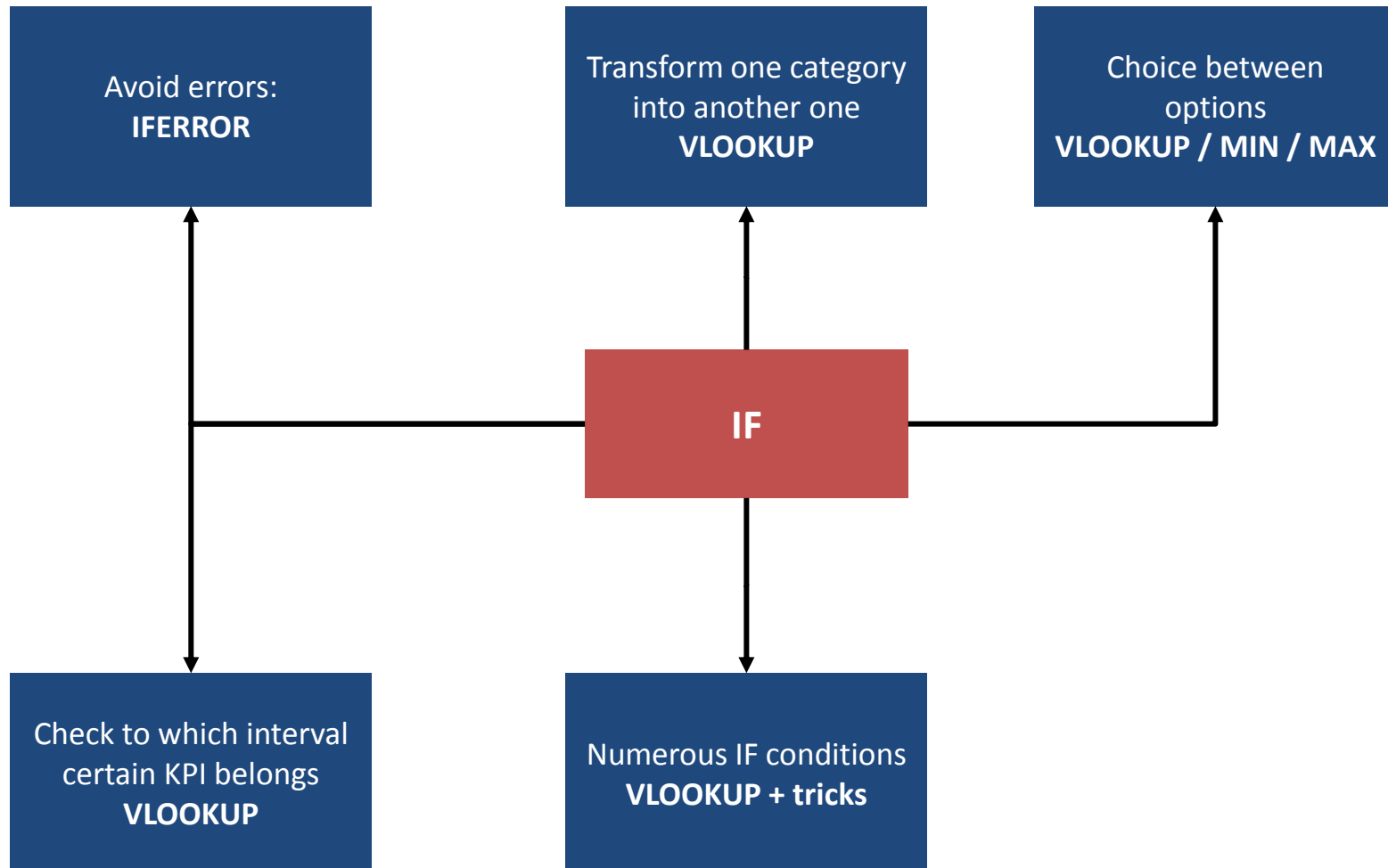
Example with IF function

```
=IF(G6<=Target!D7;Target!E7;IF(AND(G6>Target!  
!C8;G6<=Target!D8);Target!E8;IF(AND(G6>Targ  
et!C9;G6<=Target!D9);Target!E9;Target!E10)))
```

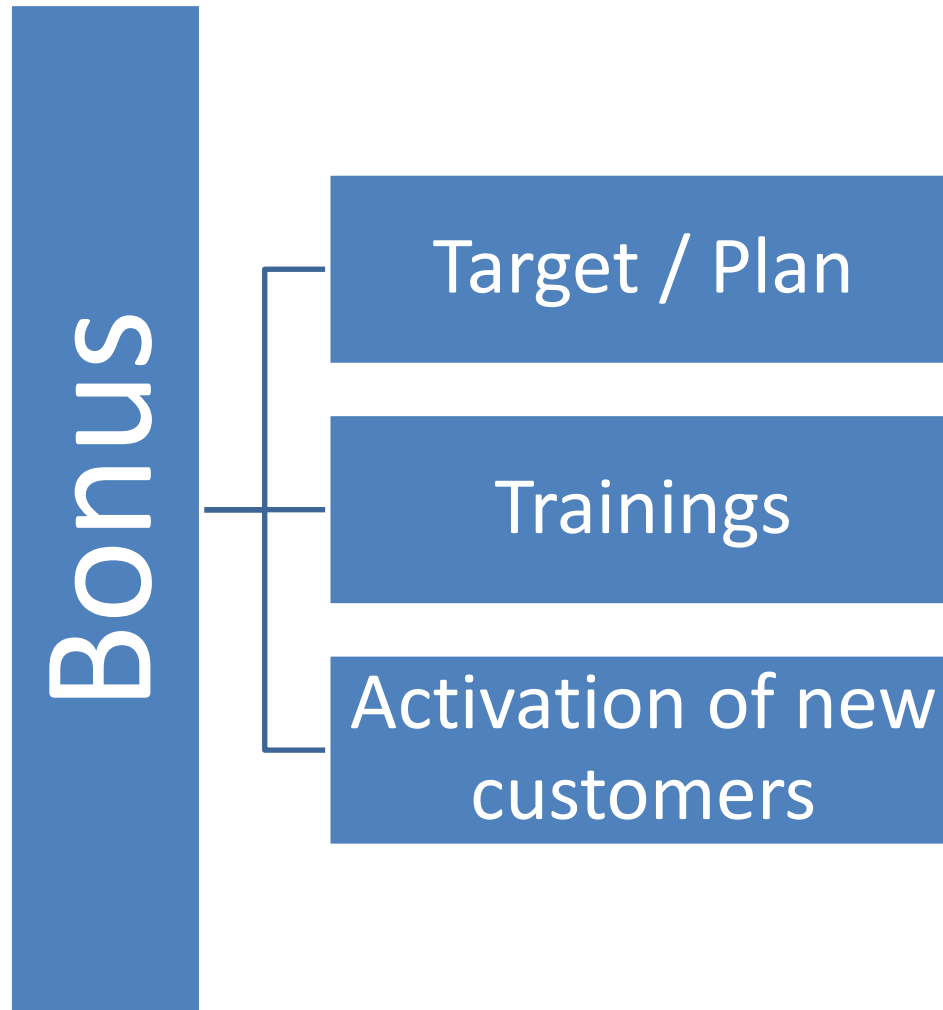
Example without IF function

```
=VLOOKUP(G6;Target!C:E;3;1)
```

Luckily in most cases you can use shorter options to replace the IF function



I will show you how to replace it with other simpler functions on using the motivation system of sales rep as an example



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Other useful funtion

There is bunch of useful functions and functionalities that you have to master to speed up

INDIRECT

**R1C1 reference
style**

Regression

NPV, IRR

**Grouping /
Ungrouping**

Histogram

MOD

**Conditional
formatting**

Data Validation

For more you can go to my extensive on-line course where I show you in details how to do it in Excel



Essential Excel for Business Analysts and Consultants?

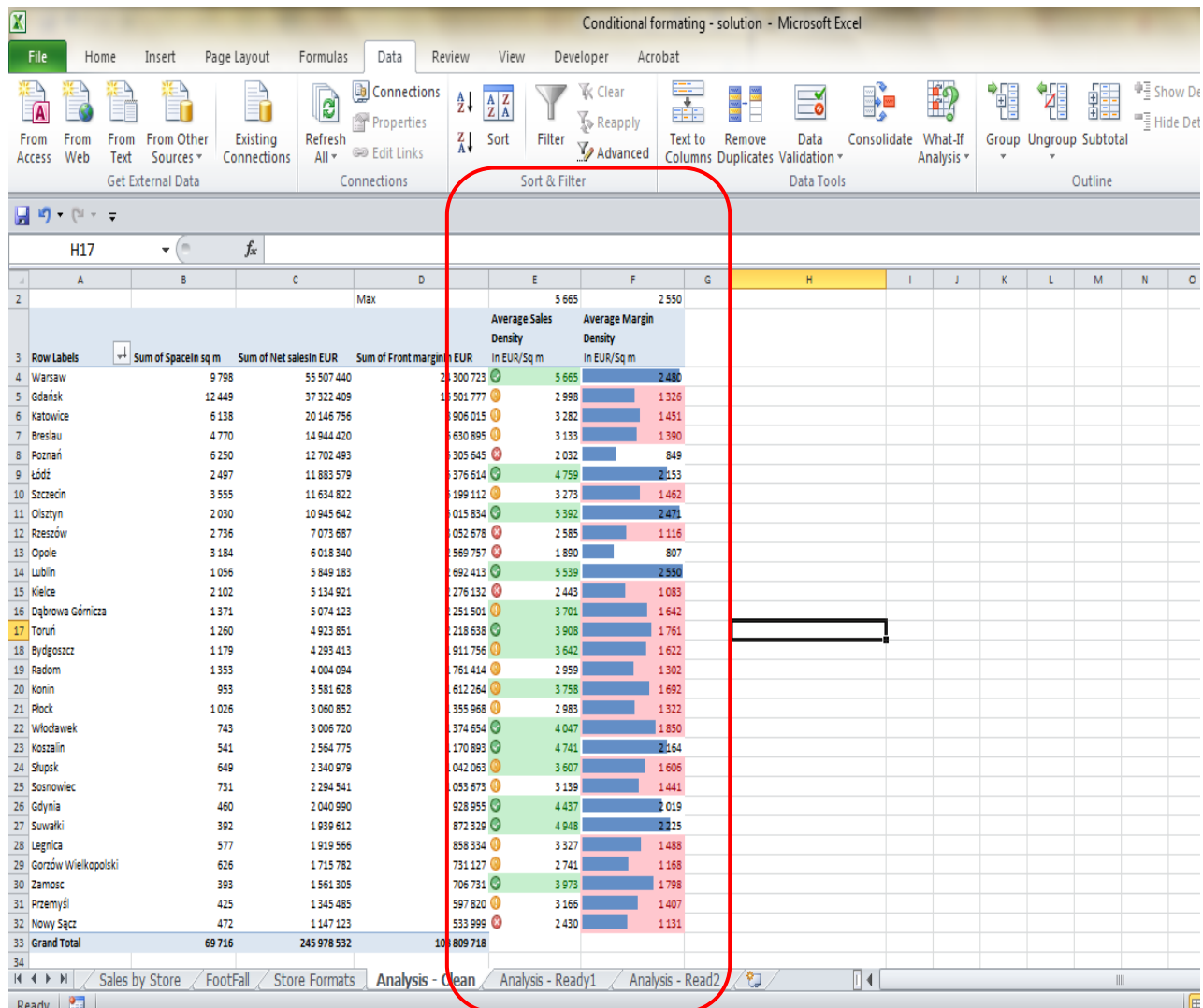
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Conditional Formatting

Sometimes you want to see in more graphical way the data or build a dashboard.



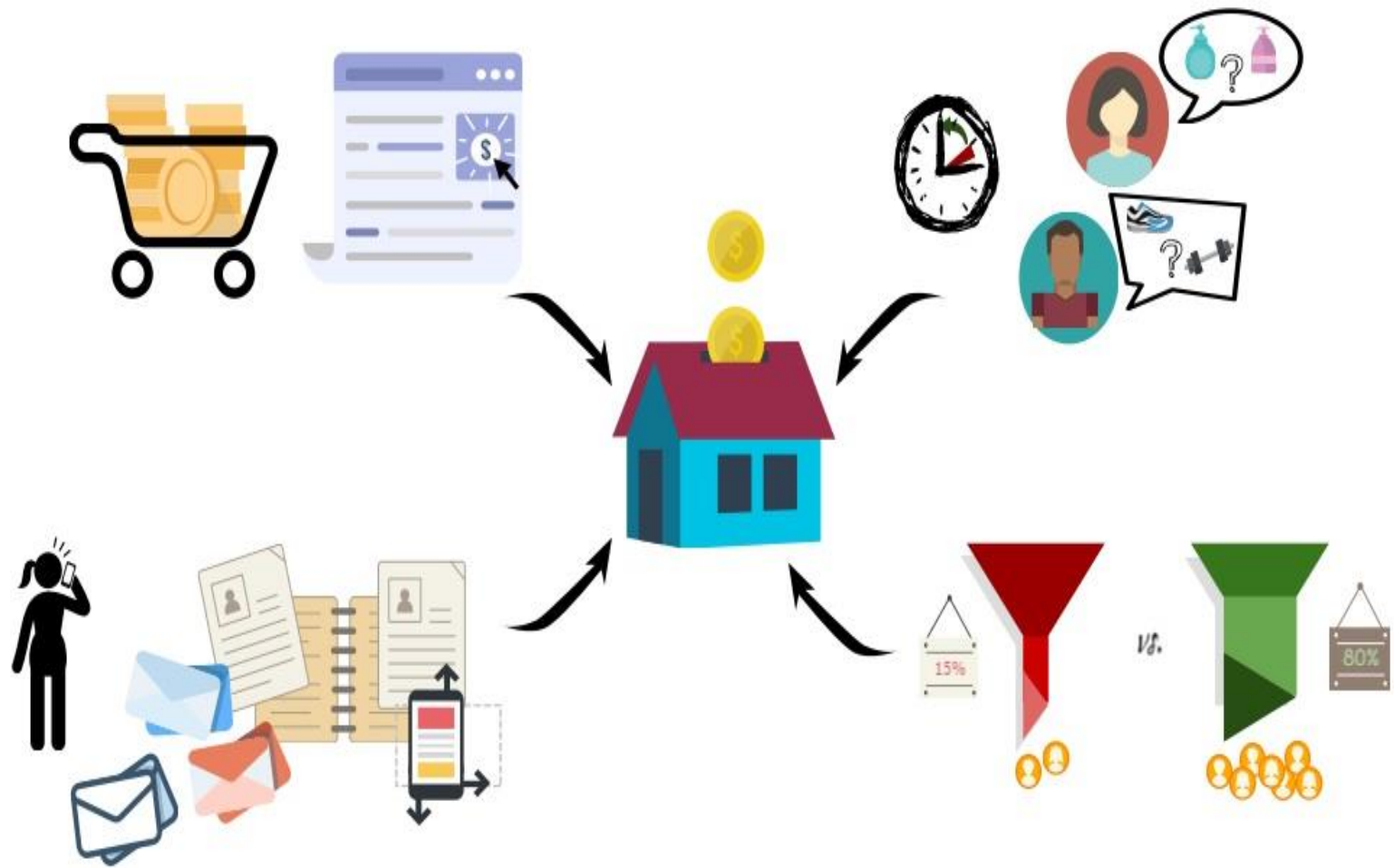
There is built-in module in Excel that you can use to achieve this. Go to Home > Conditional Formatting and pick one of the available templates

The screenshot shows the Microsoft Excel interface with the 'Conditional Formatting' menu open. The path to the 'Top/Bottom Rules' option is highlighted with a red box. The background shows a spreadsheet with data for various cities, including Warsaw, Gdansk, Katowice, etc., with columns for sales and margins.

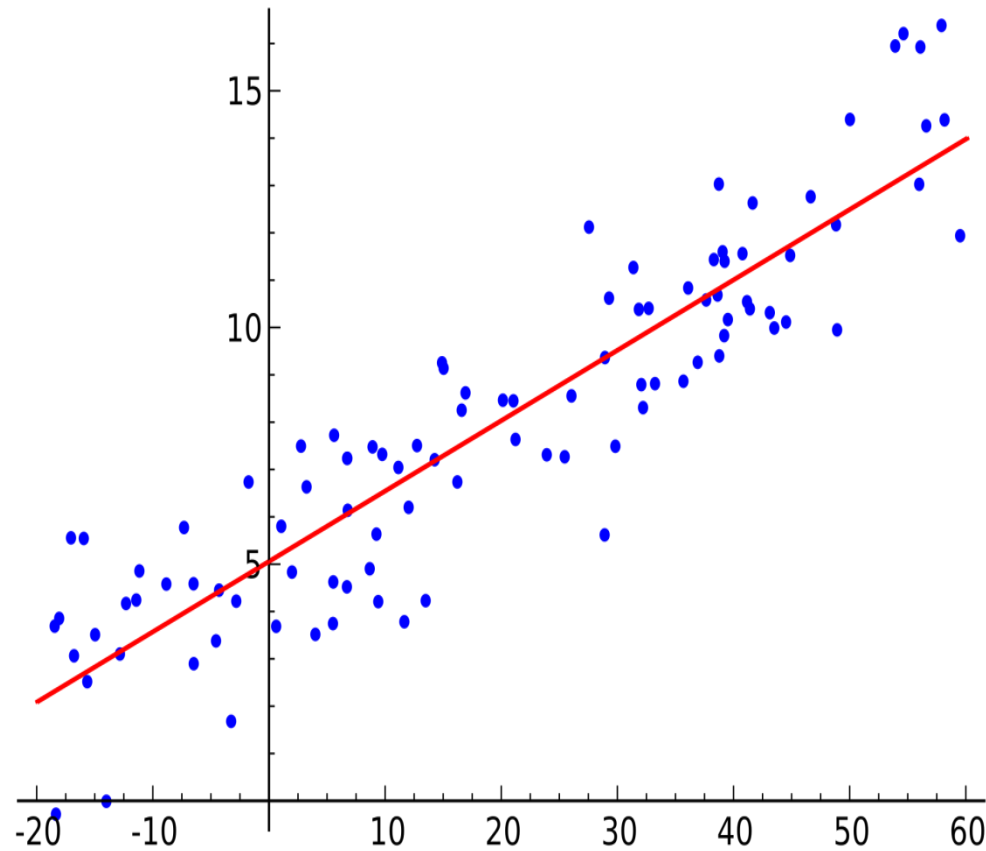
Row Labels	Sum of Space in sq m	Sum of Net sales in EUR	Sum of Front margin in EUR	Average Sales Density In EUR/Sq m	Average Margin Density In EUR/Sq m
4	Warsaw	9 798	55 507 440	24 300 723	5 665
5	Gdansk	12 449	37 322 409	16 501 777	2 998
6	Katowice	6 138	20 146 756	8 906 015	3 282
7	Breslau	4 770	14 944 420	6 630 895	3 133
8	Poznan	6 250	12 702 493	5 305 645	2 032
9	Lodz	2 497	11 883 579	5 376 614	4 759
10	Szczecin	3 555	11 634 822	5 199 112	3 273
11	Olsztyn	2 030	10 945 642	5 015 834	5 392
12	Rzeszow	2 736	7 073 687	3 052 678	2 585
13	Opole	3 184	6 018 340	2 569 757	1 890
14	Lublin	1 056	5 849 183	2 692 413	5 539
15	Kielce	2 102	5 134 921	2 276 132	2 443
16	Dąbrowa Górnicza	1 371	5 074 123	2 251 501	3 701
17	Toruń	1 260	4 923 851	2 218 638	3 908
18	Bydgoszcz	1 179	4 293 413	1 911 756	3 642
19	Radom	1 353	4 004 094	1 761 414	2 959
20	Konin	953	3 581 628	1 612 264	3 758
21	Plock	1 026	3 060 852	1 355 968	2 983
22	Wlodawek	743	3 006 720	1 374 654	4 047
23	Koszalin	541	2 564 775	1 170 893	4 741
24	Slupsk	649	2 340 979	1 042 063	3 607
25	Sosnowiec	731	2 294 541	1 053 673	3 139
26	Gdynia	460	2 040 990	928 955	4 437
27	Suwałki	392	1 939 612	872 329	4 948
28	Legnica	577	1 919 566	858 334	3 327
29	Gorzów Wielkopolski	626	1 715 782	731 127	2 741
30	Zamosc	393	1 561 305	706 731	3 973
31	Przemysl	425	1 345 485	597 820	3 166
32	Nowy Sącz	472	1 147 123	533 999	2 430
33	Grand Total	69 716	245 978 532	108 809 718	

Regression

Sometimes you want to predict certain things using the available data



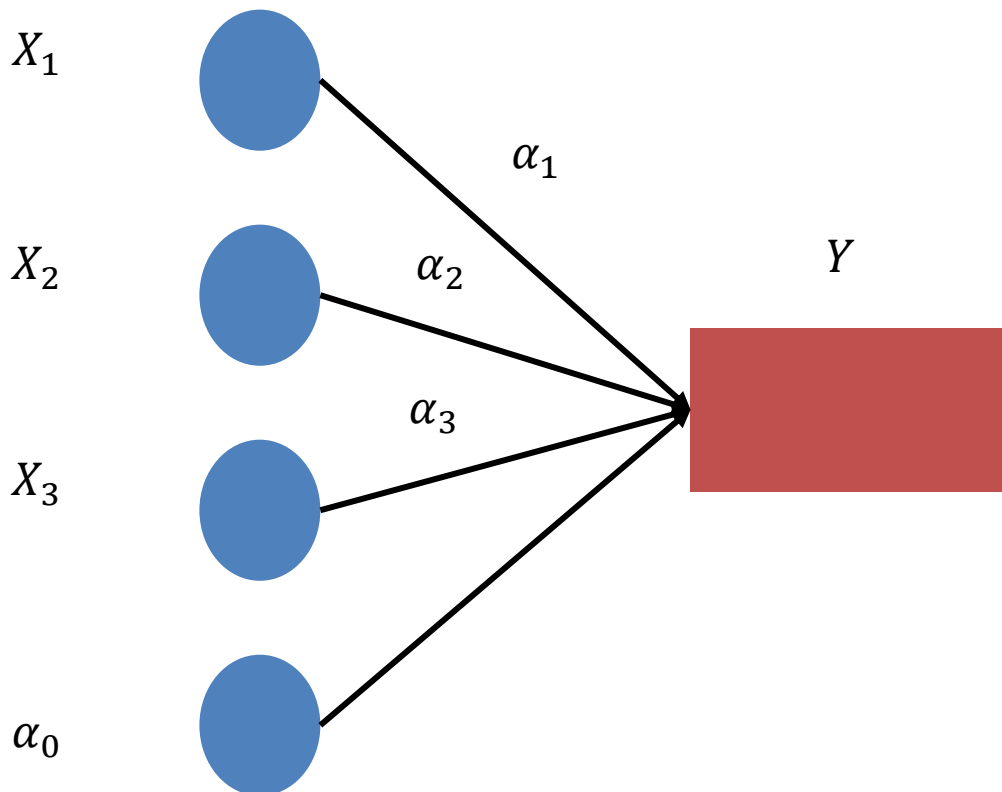
A nice way to find relation and create prediction is to use the linear regression



$$Y_t = \alpha + \alpha_1 X_t + \varepsilon_t$$

There may be situation that the thing we want to predict depend on more than one variable

$$Y_t = \alpha_0 + \alpha_1 X_{1t} + \alpha_2 X_{2t} + \alpha_3 X_{3t} + \varepsilon_t$$



A nice way to create prediction is to use the linear regression



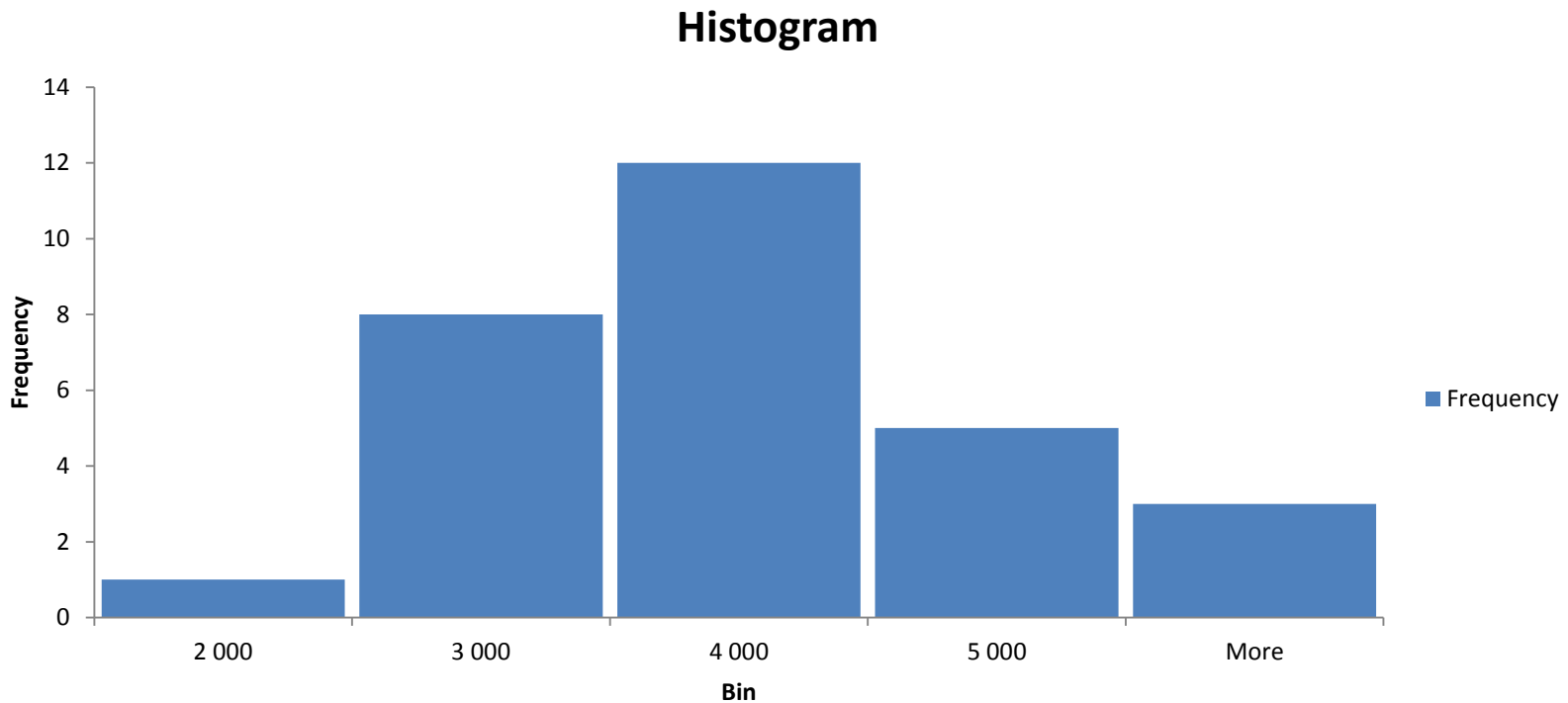
There is built-in module in Excel that you can use to do linear regression. Go to Data > Data Analytics > Regression

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Data Analysis' button in the 'Analysis' group is highlighted with a red box. The 'Data Analysis' dialog box is open, showing a list of analysis tools. 'Regression' is selected and highlighted with a red box. The background spreadsheet shows a table with columns for Year, Store Number, City, Type of the location, Net sales, and Space. The formula bar shows the formula $=IF(\$D4=H\$3;1;0)$.

Year	Store Number	City	Type of the location	Net sales	Space
2009	1036	Poznań	shopping mall	3 144 781	1 091
2009	1038	Warsaw	shopping mall	3 551 845	669
2009	1040	Sosnowiec	town street	2 548 457	731
2009	1042	Warsaw	shopping mall	6 829 566	935
2009	1044	Katowice	shopping mall	2 563 899	740
2009	1046	Warsaw	shopping mall	4 191 317	568
2009	1048	Gdańsk	shopping mall	2 967 368	638
2009	1050	Poznań	shopping mall	2 368 665	595
2009	1052	Katowice	town street	2 710 692	857
2009	1054	Poznań	shopping mall	3 157 871	760
2009	1056	Katowice	shopping mall	2 195 064	692
2009	1058	Katowice	shopping mall	2 964 014	629
2009	1060	Olsztyn	shopping mall	3 406 752	624
2009	1062	Katowice	shopping mall	3 812 134	1 896
2009	1064	Szczecin	shopping mall	2 244 808	664

Histogram

A good way to look at data on a general level is to create a histogram that shows you the distribution of certain characteristics



There is built-in module in Excel that you can use to do Histogram. Go to Data > Data Analytics > Histogram

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Data Analysis' button is highlighted in the 'Data Tools' group. The 'Data Analysis' dialog box is open, showing the 'Histogram' option selected under 'Analysis Tools'.

Year	Store Name	COGS In EUR	Space In sq m	Sales density In EUR/sq m	Type of the location	Format of the store
2010	1120 Plock	136 876	1 762 186	871 450	890 737	561 3 141 shopping mall regular
2010	1122 Warsaw	43 578	630 020	302 436	327 584	583 1 081 shopping mall regular
2010	1124 Gdynia	135 677	1 818 324	904 987	913 337	460 3 953 shopping mall regular
2010	1126 Radom	143 884	1 420 039	678 196	741 843	780 1 821 shopping mall big
2010	1128 Przemyśl	15 582	196 528	97 215	99 313	425 462 shopping mall small
2010	1130 Warsaw	51 529	760 067	285 030	475 036	1992 382 shopping mall big box
2010	1132 Breslau	15 844	225 144	109 386	115 758	779 289 shopping mall big
2010	1134 Gdańsk	175 981	1 877 932	921 385	956 547	1820 1 032 shopping mall big box
2010	1136 Katowice	151 059	1 600 342	773 609	826 733	782 2 046 shopping mall big
2010	1138 Łódź	109 208	1 227 854	622 577	605 277	365 3 364 shopping mall small
2010	1140 Poznań	15 507	127 373	33 512	93 860	436 292 shopping mall small
2011	1004 Breslau	134 375	1 345 430	621 020	724 409	1 168 1 152 shopping mall big box
2011	1008 Warsaw	478 063	5 297 160	2 459 662	2 837 497	682 7 767 shopping mall big
2011	1012 Opole	117 069	1 203 989	564 331	639 658	562 2 142 shopping mall regular
2011	1014 Gdańsk	165 579	1 757 494	819 892	937 601	832 2 112 shopping mall big

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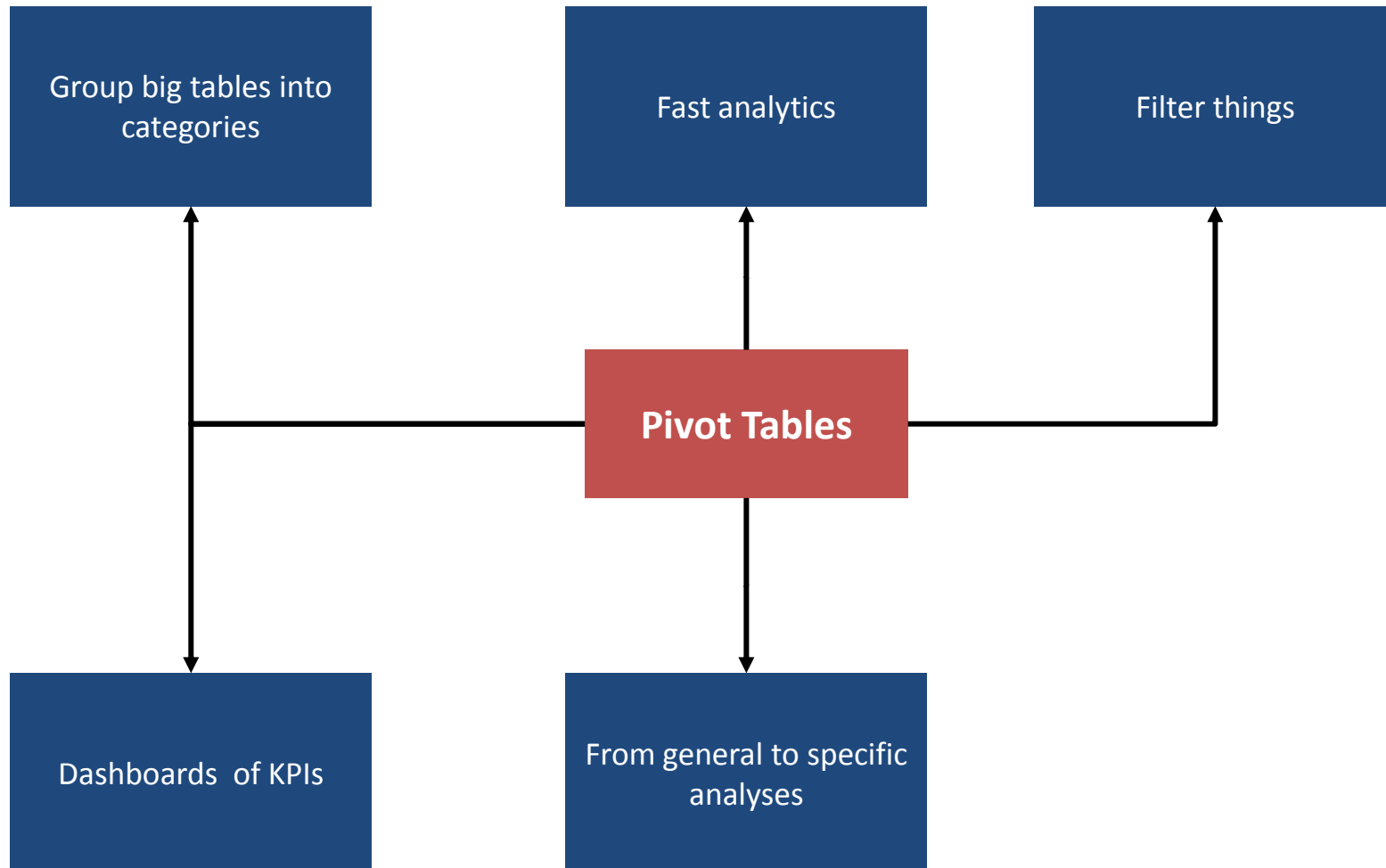
Being faster with
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Example of analysis

Elements of Visual
Basic

Pivot Tables and their alternatives

Pivot Tables enable you do to a lot of things



For some purposes can be replaced with other functions

COUNTIFS

Pivot Tables

SUMIFS

AVERAGEIFS

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Rules for Excel

What rules should be used when building analysis in Excel

Usage of colors

Consistency between
sheets

Pyramid principle

1-source rule

Repetition of variables

Shortcuts

No mouse

Description

Data source

Master sheet

Below the most important shortcut that you should use on PC (1/3)

Ctrl + 1

- opens the table with formatting the cells

Ctrl + s

- saves the file

Ctrl + c

- uploads the cell for copying

Ctrl + v

- copies the value of the cell

Ctrl + z

- undoes a command

Ctrl + y

- Go forward with the command previously undone

Ctrl + b

- makes the text bold

Ctrl + u

- underlines the text

Below the most important shortcut that you should use on PC (2/3)

Ctrl + i

- makes the text italic

F2

- edits the given cell

F4

- enables to freeze the formula in the addresses

F9

- changes the cell formula into value

Ctrl + a

- select everything

Ctrl + f

- turns on the search box - you can look for a string

Ctrl + h

- replaces 1 string with another one

Ctrl + k

- inserts hyperlink

Below the most important shortcut that you should use on PC (3/3)

Shift + space and afterwards Ctrl + Shift + "+"

Shift + space and afterwards Ctrl + "-"

Ctrl + space and afterwards Ctrl + Shift + "+"

Shift + space and afterwards Ctrl + "-"

Ctrl + Shift + "+"

You select the rows (i.e. Shift + Space and arrow down or up to select the specific rows) and then Shift + Alt + arrow Right

You select the rows (i.e. Shift + Space and arrow down or up to select the specific rows) and then Shift + Alt + arrow Left

You select the Columns (i.e. Ctrl + Space and arrow left or right to select the specific columns) and then Shift + Alt + arrow Right

You select the Columns (i.e. Ctrl + Space and arrow left or right to select the specific columns) and then Shift + Alt + arrow Left

- adds a new row
- removes the row
- adds a new column
- removes the column
- lets you add new columns or rows
- group a bunch of rows
- ungroup a bunch of rows
- group a bunch of columns
- ungroup a bunch of columns

Basic functions

- SUMIF / SUMIFS
- COUNTIF / COUNTIFS
- HLOOKUP
- VLOOKUP
- MATCH
- SUMPRODUCT
- IF
- AND / OR
- IFERROR
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What kind of analysis you can make using Excel?

You will find this section well developed in another presentation suggested below. Click on the cover below to go to the presentation

How to become world class analyst

A practical guide

presentation

For more check our on-line course on how to use the Excel as a Business Analyst and Consultant



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