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I. Summary

Macro buttons :

1° solution

- Developer tool

- Start to record

- We named the macro "go_to_ partner"

- From summary worksheet to partners worksheet

- Arrêt du record

- button Creation

- right-Click

- assign macro

- Select the macro "go_to_partners".

2° solution

- Developper tool

- Insert button

- Right click on the button

- Assign macro

- Name the macro "go_to_partners"

- Click new

- Insert the following code :

    Sub go_to_partners

    ThisWorkbook.Sheets("Partners").Activate

- End Sub
- Save
- Ok

II. Operations_Database

1. Format the data as table

We select the data; zI go to the Insert tab and click on Table.

2. Find the "category" according to the product reference
We use the VLOOKUP formula.

First, we change the Name Box on the Product_List worksheet to Product_List
=VLOOKUP(C2;Product_List;6;FALSE)

We select the C2 cells because we are looking for the product reference category, then I put the Product_List as table array, then we choose the number of the column and then we put FALSE to have the exact match.

3. The column "Transaction Quantity" must contain only numbers.

First, I select the column, then we use the data validation Tools in the data table. We have two possibilities :

1° Data Validation --> Whole number --> greater than or equal to --> minimum 0
2° Data Validation --> Custom --> Formula : ISNUMBER(H2) --> Title : Only number --> Error message : Please fill the cell only with number

4. The "City/Region" column will be calculated automatically based on "Supplier Name / Customer Name" column and according to the information in the "Partners" sheet.

We use again the VLOOKUP tool.

=VLOOKUP(E2;suppliers___clients__1;2;FALSE)

E2 --> I named the partners worksheet name box by suppliers___clients__1 --> I select the column 2 and then false to have the exact match

5. Unit price formula :
    =VLOOKUP(C2,Product_List,IF(G2="Purchase",7,8),FALSE)

6. Button data entry form

7. Button for summary

Check the explanation in summary.

Total value (quantity on hand * unit price)

Formula : =VLOOKUP([@[Product_reference]],Product_List,5,FALSE)*[@[Unit Price]]

III.   Partners

1. Data--> get data--> from file--> CSV
2. Table design--> Table style --> Green Table style medium 7
3. Name Box --> suppliers___clients__1
4. Button
5. [=CONCATENATE([@Partners],"@Cosmetic11.com")](#)

We use CONCATENATE formula because it is we need to do an email adress automatically with the name and @Cosmetic11.com.

IV.   Calculation and analysis

=SUM(F$1:F$86)

We use this formula to calcul the sum of the cell F1 to F86.

=AVERAGEIF(D2:D86,"D O'Brien", F2:F86)

We use this formula averageif because we need to do average(F2 to F86) with a criteria of D O'Brien research in the colum F.

=MAXIFS(F2:F86,D2:D86,"W Montgomery")

We use this formula MAXIFS because we need to know the max but with the criteria of W Montgomery.

=IF(YEAR("2020"),MIN(F2:F86),"")

We use this formula If because of criteria Year and min, so in the formula I put also year first and min.

If (year is 2020), so minimum of the colum F is true, otherwise false.

=COUNTIF(F2:F87,">600")

We use this formula because we need to count the number of transaction quantity with the criteria over 600

=IF(YEAR("2019"),MAX(F2:F86),"")

We use this formula because we want 2 criteria year and max.

V.   Data Entry form

We must create the form first with the different type of data.

- Developer tool

- Start to record

- We named the macro "input_into_operations_database"

- Then go to operation database

- Click in cell A2

- Insert

- Table rows above

- Return to data entry form and copy all the cell when you put the data and paste into the cell related in Operations Database

- Stop the record

- Insert

- Add new button

- Assign macro

- Select macro named "input_into_operations_database"

- Click Ok.

2°Customize the form and apply some controls by using drop down list

For example: add drop down list for product reference :

- click on the cell where u put the data concerning the product reference
- go to data
- data validation-
- select list
- go to worksheet products_list
- Select the column product_reference
- Click OK.
-

Repeat this for all the cell where u want to put drop down list.

We must find automatically the category and the city region in the data entry form when we use the drop-down list,

Here is the formula to do this : =VLOOKUP(C18,Product_List,6,FALSE)

With C18 the cell where we have the drop-down list of the product reference
=VLOOKUP(C25,suppliers___clients__1,2,FALSE)

And for this C25 is where we have the drop-down list of the supplier's name.

VI.   Product_List

1. Customize & format the data as Tables

- Go to the worksheet Product List
- Click on cell A1
- Do CTRL+A to select everything
- Go to Insert
- Go on "Table"
- Click on a table design

2. Name the table

- Click on cell of table
- Go to Table Design
- Rename Table in Table Name as "Product_List"

3. Quantity on hand : (initial stocks + total purchase quantity - total sale quantity)

Initial Stock

-

SUMIFS(Column of values of transactions in Operation Database ; Range of criteria 1 (Column of references in Operation Database) ; Criteria 1 (Cell A2) ; Range of criteria 2 (Column of Types of transactions) ; Criteria 2 ("Purchase")

+

SUMIFS(Column of values of transactions in Operation Database ; Range of criteria 1 (Column of references in Operation Database) ; Criteria 1 (Cell A2) ; Range of criteria 2 (Column of Types of transactions) ; Criteria 2 ("Sale")

=[@[Initial_stocks]] + SUMIFS(data_transaction[[Transaction Quantity]];data_transaction[Product_reference];[@[Product_reference]];data_transaction[Transaction Type];"Purchase") - SUMIFS(data_transaction[[Transaction Quantity]];data_transaction[Product_reference];[@[Product_reference]];data_transaction[Transaction Type];"Sale")

4. Put in red the lines with an "Alert stock" less than "1000"
Select the column Alert Stock -> Home -> go to conditional formatting -> Highlight Cells Rules -> Less than 1000 with Light red fill with dark red text.

VII.   Dashboard

1. So, first for our sales and purchases evolution per month and year charts we did 1 pivot table.

We put transactions type in the columns, years and transaction date in the rows and transaction quantity for the values.

We get that :

Sum of Transaction Quantity	Column Labels		
Row Labels	Purchase	Sale	Grand Total
2019	**3295**	**2258**	**5553**
Sep	159	195	354
Oct	100	35	135
Nov	968	916	1884
Dec	2068	1112	3180
2020	**1898**	**2474**	**4372**
Jan	255	830	1085
Feb	343	512	855
Mar	180	20	200
Apr	543	403	946
May		331	331
Jun	297	308	605
Jul	250		250
Aug	30	70	100
Grand Total	**5193**	**4732**	**9925**

And with that, we created a chart and choose the 2-D column charts like this :
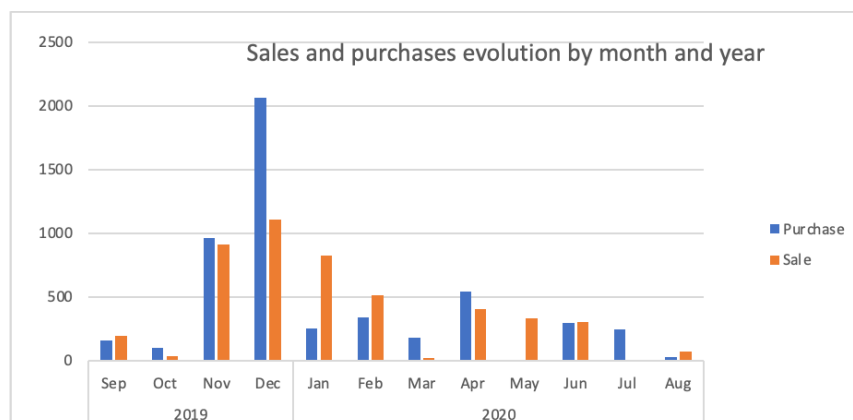
2. For the five top selling, we did another pivot table.

We put the products reference for the rows and the transaction quantity in the values. And then we right-clicked on the first product reference then filter and then TOP 10, we changed the ten to five, and get that :

Row Labels	Sum of Transaction Quantity
025-B10	718
025-B8	474
025-B9	2725
025-F11	499
025-H5	1980
Grand Total	6396

Next, we selected the table and chose the 2-D pie chart.
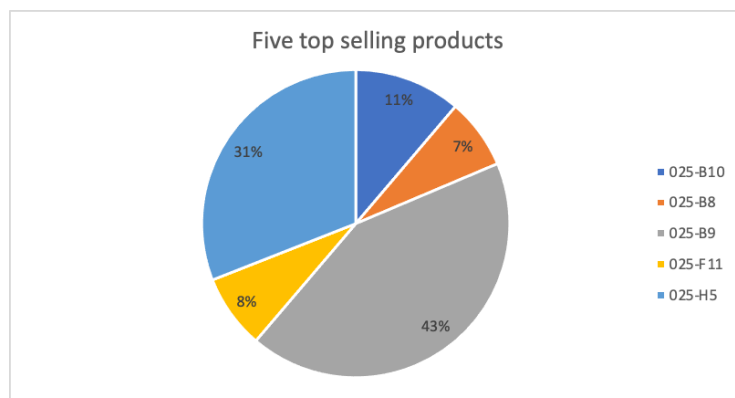
We get that :

We replace the data by percentage by right-clicked, data labels and percentage.

For the 3 other charts : we did 3 others pivot table.
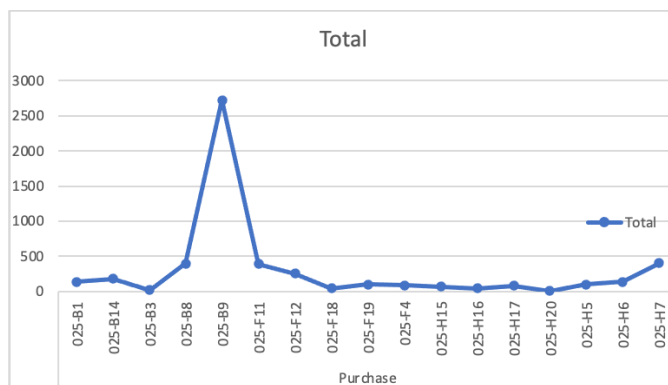
1° : Rows : transaction type and product reference
2° values : transaction quantity

We get :

Row Labels	Sum of Transaction Quantity
Purchase	5193
025-B1	140
025-B14	179
025-B3	20
025-B8	400
025-B9	2725
025-F11	394
025-F12	255
025-F18	48
025-F19	98
025-F4	87
025-H15	68
025-H16	47
025-H17	85
025-H20	5
025-H5	100
025-H6	138
025-H7	404
Grand Total	5193

We chose a 2-D line chart.

We get :

We can see which product is the more purchased.
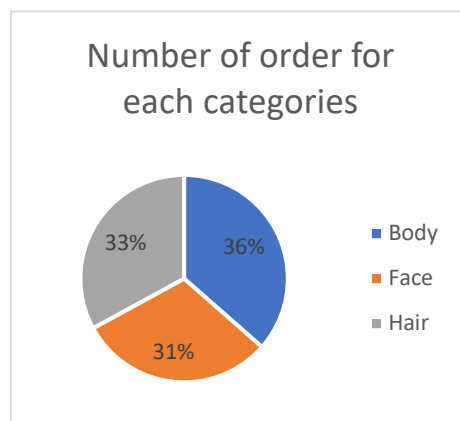
Then we did another pivot table :

Rows : category ; values : order number

We get :

Row Labels	Count of Order number
Body	31
Face	26
Hair	28
Grand Total	85

We choose another 2-D pie chart.

We get :

And for the last one : we did another pivot table .

Rows : city/region and transaction type
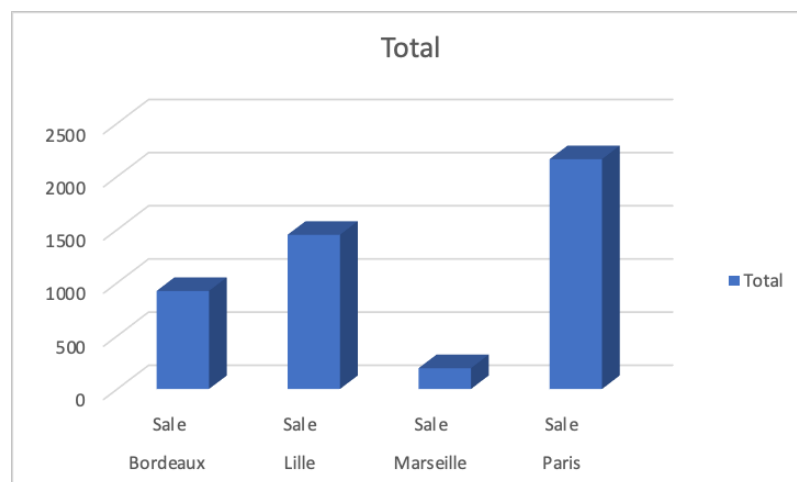
Values : transaction type

Filters : categories

We get :

Row Labels	Sum of Transaction Quantity
Category	(All)
Bordeaux	923
Sale	923
Lille	1451
Sale	1451
Marseille	196
Sale	196
Paris	2162
Sale	2162
Grand Total	4732

We choose the 3-D Column chart and we get :

We can see that the sales are the higher in Paris.

VIII. Optimization&Scenarios_Analysis

Below are functions we used for fun :

=FILTER(data_transaction,product_reference="025-B1")
=TRANSPOSE(A7:D10)

1- Model and solve this problem using Solver.
This formula is the objective fonction with must find according to 3 decisions variables:

=SUMPRODUCT(B28:D28,B34:D34)

The 3 decisions variables are the numbers of items we must buy for each supplier with the different constraints.

- Data and then Solver
- Set objective : the cell with the formula
- To min by changing the 3 cells
- We create the 4 constraints
- We select the method solving Simplex LP
- Solve.

2. to compare these both scenarios with the optimal solution proposed by solver to know how much costs these scenarios.
We have to scenarios :
Scenario 1 :
Cosmetic 11
purchase
200 items
from each
supplier
Scenario 2 :
Cosmetic 11
purchase
600 items

from local
supplier with
10,7 unit
price

We got 3 cells : product sold, price per unit and cost.

We must new this cell for the Scenario Summary

- Data
- Whats-if analysis
- Scenario manager

We create 3 scenarios for each supplier, because supplier 3 don't have the same price per unit than supplier 1 and 2. and we create 1 scenario for the new local supplier.

Click summary and new worksheet.

3- If "Cosmetic 11" decide to collaborate with the new local supplier , it would like to respect a purchase budget for the product (025-B1) of 5900 $ in the next period . How many items to sell should target ?

We need to find the items with goal seek

We create 3 cells : number of items, price per unit and purchase budget with the following formula : =number of items*price per unit

- Data
- Whats-if analysis
- Goal seek

- Set cell : purchase budget
- To value : 5900
- By changing cell number of items
- Click Ok

IX. Member of your group

We used different fonction like = LOWER() and = UPPER()

And we use the fonction =CONCATENATE() to create email.