

PIVOT TABLES, A DECISION-MAKING INSTRUMENT FOR TOURISM AGENCIES

Cezar Mihălcescu^{*1}

Sion Beatrice²

Alexandra Mărginean³

ABSTRACT

A pivot table uses data organized on two dimensions to create a three-dimensional table. It represents a very proper means to concentrate a lot of information in a small space. Pivot tables allow data audit as well. The unique characteristic of pivot tables is their capacity to move fields by drag and drop. Excel instantaneously replaces the data in a new arrangement. New formulae or the re-filtering of data are not necessary, as the pivot table is automatically recalculated when the fields are recalculated.

Key words: data analysis, Excel, pivot table, table report

Introduction

In order to make a report with a pivot table, the information that is taken and processed in it must be distributed on columns, in a table. We should not forget that Excel means spreadsheets.

Secondly (and this where the mistake usually appears), it is advisable, before making a report, to have all the necessary information for future reports in the respective table.

The **Pivot Table Wizard** application can be used to create a new pivot table or to edit an existing pivot table.

In order to create a pivot table one must go through the following steps:

1. To execute the sequence **Data\PivotTable and PivotChart Report**.

2. At the first step of the **PivotTable Wizard** application, one must indicate the data source one intends to use for the pivot table. For the data source that needs to be analyzed, the following four options are available:

- “ **Microsoft Excel List or Database** – uses organized data with row and column labels on a calculation sheet. It is a pre-defined parameter.

¹ * Corresponding author. Professor, PhD. School of Domestic and International Economy of Tourism. Romanian – American University. 1B, Expozitiei Blvd., district 1, code 012101, Bucharest, Romania. Email: cezar_mihalcescu@hotmail.com

² Lecturer, PhD. School of Domestic and International Economy of Tourism. Romanian – American University. 1B, Expozitiei Blvd., district 1, code 012101, Bucharest, Romania. Email: beatrice_sion@yahoo.com

³ Teaching assistant, PhD. School of Domestic and International Economy of Tourism. Romanian – American University. 1B, Expozitiei Blvd., district 1, code 012101, Bucharest, Romania. Email: marginean.alexandra.roxana@profesor.rau.ro

· **External Data source** – uses a file or data base outside the current calculation register.

- **Multiple Consolidation Ranges** – creates a pivot table or chart comprising more **Excel** calculation sheets.

Another PivotTable or PivotChart – creates a pivot table or pivot chart from another pivot report from the same calculation register.

3. To establish the type of pivot report that you want to create: a table or a chart. Then, select **Next**.

4. During the second step of the **Pivot Table Wizard** application, select a data source if one is not selected, or if the data comes from a different calculation register or field than the one present in the dialogue box.

5. The third step of the **PivotTable Wizard** application provides one with more options to place and format the pivot table. The pivot table can be placed on a new calculation sheet or the current sheet. If one opts for the existing calculation sheet one must specify the location of the pivot table. Also, one can use the **Layout** and **Options** buttons to continue the specification of desired parameters for the new pivot table. These parameters can be altered afterwards as well, after the creation of the pivot table or chart.

6. When one has finished the selection of desired options, one clicks **Finish** to create the table.

The use of pivot tables to improve activity

We have chosen for the analysis a smaller database, in terms of entries, in order to make it easier to explain the work method. Thus, a data base with 89 entries has been chosen, containing information from the period 2009-2014.

One can see some of the data in Figure 1, which contains only a part of the analyzed information, for lack of space. As one can see in the figure below, the information has been centralized according to the invoices issued to the supermarkets by the client, according to the city or county they belong to, as well as according to the time line, respectively by months and years.

	A	B	C	D	E	F	G	H
1	Nr Factura	SuperMarket	Localitate	Judet	Nume client	Vanzari	An	Luna
2	Fact 106	Carrefour	ORADEA	BIHOR	Glam SRL	200	2013	feb
3	Fact 109	Carrefour	ORADEA	BIHOR	IMPEX SRL	10	2013	mar
4	Fact 102	Carrefour	BRASOV	BRASOV	Hotel Mox	175	2013	aug
5	Fact 108	Carrefour	ORADEA	BIHOR	Rodison SRL	17	2013	ian
6	Fact 101	Carrefour	TIMISOARA	TIMIS	ABC	395	2014	aug
7	Fact 103	Carrefour	TIMISOARA	TIMIS	IMPEX SRL	84	2014	aug
8	Fact 105	Carrefour	ORADEA	BIHOR	Ard Com	28	2014	ian
9	Fact 119	Carrefour Express	BUCURESTI	BUCURESTI	SC IMPEX	126	2013	sep
10	Fact 120	Carrefour Express	CONSTANTA	CONSTANTA	IMPEX SRL	47	2013	aug
11	Fact 112	Carrefour Express	TIMISOARA	TIMIS	IMPEX SRL	20	2013	sep
12	Fact 115	Carrefour Express	ORADEA	BIHOR	IMPEX SRL	340	2013	apr
13	Fact 118	Carrefour Express	ORADEA	BIHOR	IMPEX SRL	212	2013	apr
14	Fact 114	Carrefour Express	BUCURESTI	BUCURESTI	IMPEX SRL	1.204	2014	sep
15	Fact 113	Carrefour Express	TIMISOARA	TIMIS	Rodison SRL	1.638	2014	sep
16	Fact 116	Carrefour Express	TIMISOARA	TIMIS	Glam SRL	300	2014	oct
17	Fact 121	Carrefour Express	TIMISOARA	TIMIS	Hotel ABRA	15	2014	oct
18	Fact 132	Cora	BRASOV	BRASOV	Glam SRL	11	2013	sep
19	Fact 122	Cora	ORADEA	BIHOR	New service	2.275	2013	ian
20	Fact 126	Cora	BRASOV	BRASOV	SC IMPEX	108	2014	sep
21	Fact 129	Cora	CONSTANTA	CONSTANTA	IMPEX SRL	57	2014	iul
22	Fact 125	Cora	TIMISOARA	TIMIS	Rodison SRL	185	2014	nov
23	Fact 133	Ethos	BRASOV	BRASOV	IMPEX SRL	1.425	2013	oct
24	Fact 135	Ethos	CONSTANTA	CONSTANTA	SC IMPEX	1.011	2013	aug
25	Fact 138	Ethos	BUCURESTI	BUCURESTI	IMPEX SRL	63	2014	oct
26	Fact 139	Ethos	CONSTANTA	CONSTANTA	Steph SA	29	2014	sep
27	Fact 142	Ethos	CONSTANTA	CONSTANTA	IMPEX SRL	1	2014	sep
28	Fact 140	Ethos	TIMISOARA	TIMIS	Ard Com	19	2014	dec
29	Fact 141	Ethos	TIMISOARA	TIMIS	IMPEX SRL	4	2014	ian
30	Fact 143	Ethos	ORADEA	BIHOR	Hotel ABRA	0	2014	mai
31	Fact 137	Ethos	BRASOV	BRASOV	Hotel Mox	380	2014	oct
32	Fact 145	Fidello Supermarket	BRASOV	BRASOV	IMPEX SRL	731	2013	dec
33	Fact 149	Fidello Supermarket	BRASOV	BRASOV	Ard Com	64	2013	iul
34	Fact 147	Fidello Supermarket	BUCURESTI	BUCURESTI	New service	307	2013	oct
35	Fact 153	Fidello Supermarket	CONSTANTA	CONSTANTA	IMPEX SRL	18	2013	oct
36	Fact 151	Fidello Supermarket	TIMISOARA	TIMIS	IMPEX SRL	26	2013	feb
37	Fact 148	Fidello Supermarket	BRASOV	BRASOV	Hotel ABRA	230	2014	iun
38	Fact 144	Fidello Supermarket	BRASOV	BRASOV	IMPEX SRL	3.598	2014	nov
39	Fact 150	Fidello Supermarket	BUCURESTI	BUCURESTI	Fort X	40	2014	nov
40	Fact 152	Fidello Supermarket	CONSTANTA	CONSTANTA	Hotel Mox	24	2014	oct
41	Fact 158	G market	ORADEA	BIHOR	Steph SA	254	2013	mai
42	Fact 161	G market	TIMISOARA	TIMIS	IMPEX SRL	50	2013	mar
43	Fact 163	G market	TIMISOARA	TIMIS	IMPEX SRL	9	2013	ian

Figure 1: The situation of invoices to supermarkets issued by service providers in 2009-2014

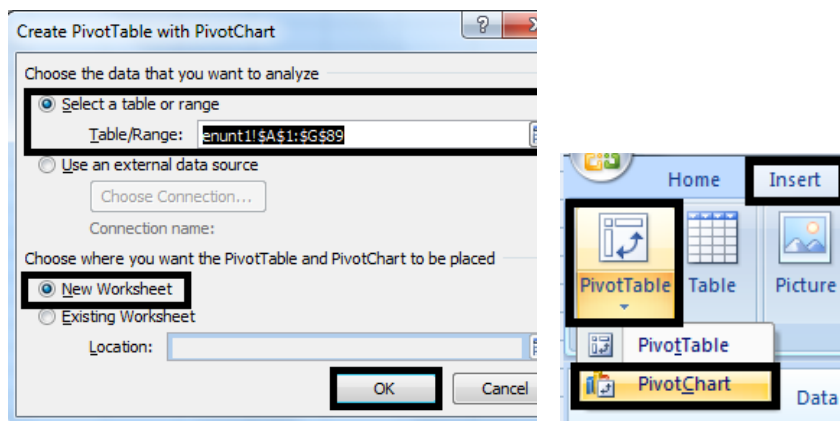


Figure 2: The first step in the creation of pivot tables

Source: Microsoft Office-Excel 2013

For a better understanding of the functioning of pivot tables and of the data manipulation module, we shall use various examples. A first such instance would be to determine the sum of sales every year, centralized by counties.

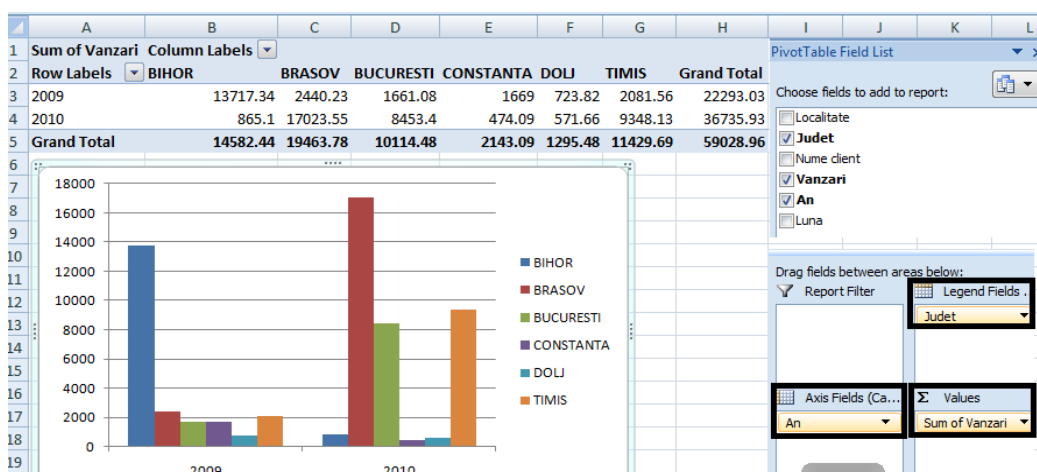


Figure 3: The sum of sales in 2009/2010, centralized by counties

Source: Microsoft Office-Excel 2013

With the help of pivot tables dynamic graphs can be made as well, which change by themselves the moment we choose other data.

In figure 4 we are presenting a graph that shows the evolution of sales in 2009, for each month in part, arranged chronologically for each client.

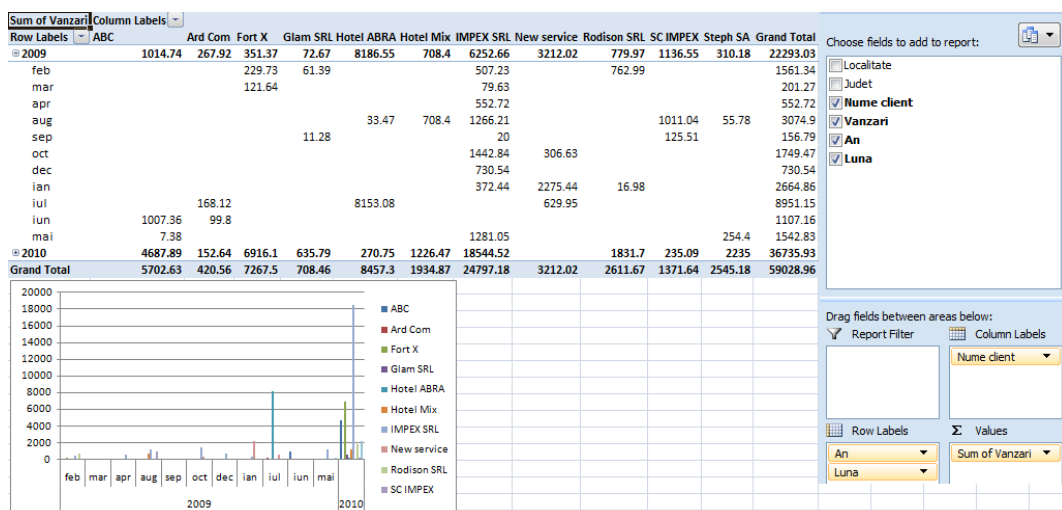


Figure 4: The chronological arrangement of sales for each company in part

Source: Microsoft Office-Excel 2013

Of Settings: Value Field Settings, one can make sums, products, a calculation of the biggest/smallest value.

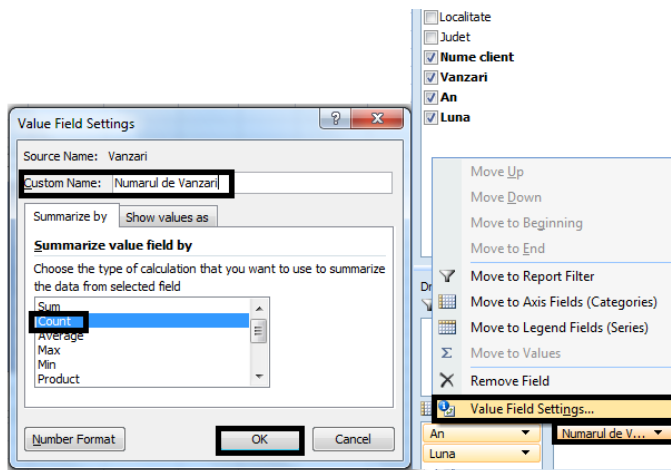


Figure 5: Settings window

Source: Microsoft Office-Excel 2013

In order to exemplify the way in which the available options in the Value Field Settings window can be used, we wish to determine the amount of sales for the year 2010 for the Abra Hotel and the Mix Hotel, centralized in one graph.

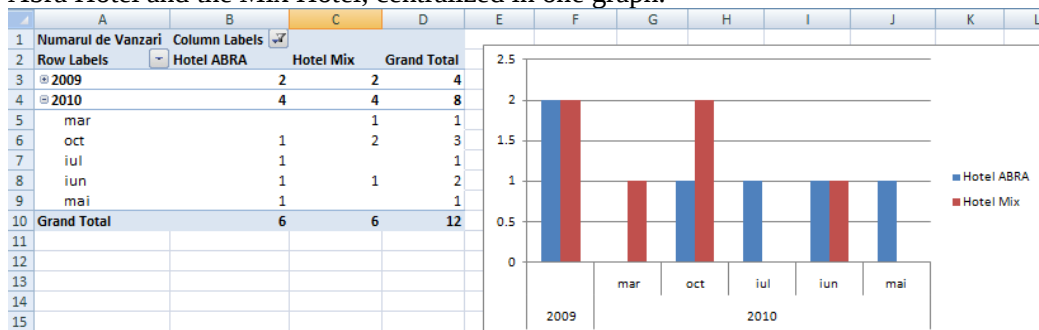


Figure 6: The amount of sales for 2010 for the two hotels that we have selected

Source: Microsoft Office-Excel 2013

As we can see in figure 7, the calculation of the sales average for each month and in a centralized way, on each city, is not at all a complicated task. It can be done by selecting the fields *place*, *sales amount*, *year* and *month*, positioned on a row or in a column. According to one's preferences, we can determine the sales average just by choosing the *average* option from Settings.

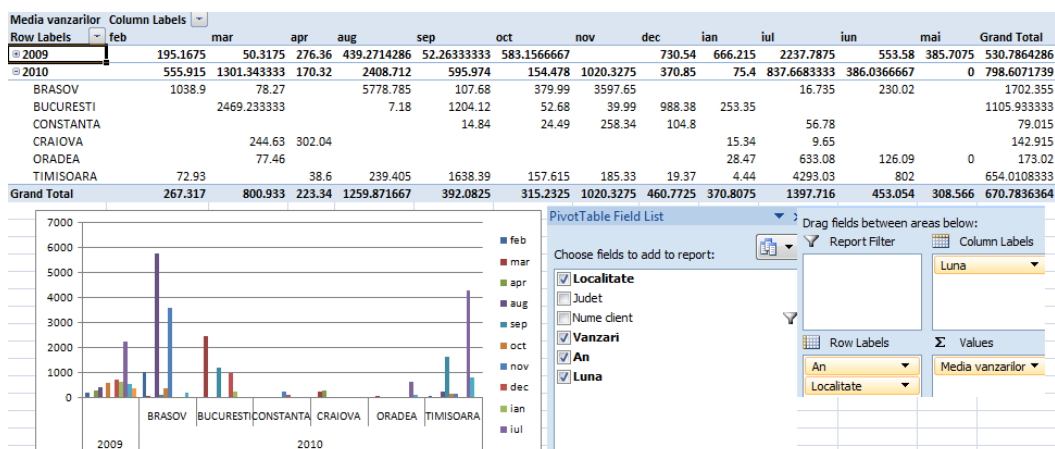


Figure 7: The sales average, centralized on cities

Source: Microsoft Office-Excel 2013

In case we want to generate multiple reports, we use Report Filter. For a better understanding of the way in which these multiple reports are made, we wish to generate a report for every county, in which the sales average centralized on each month of the year should be displayed.

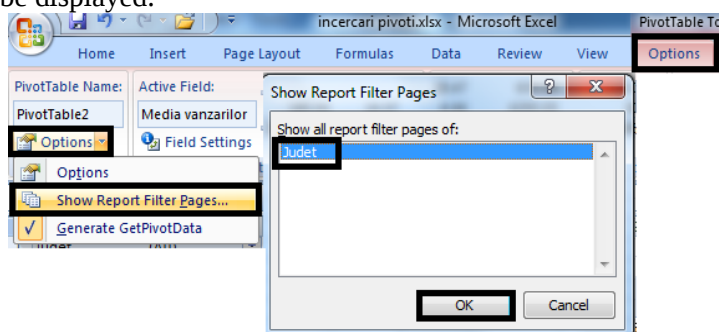
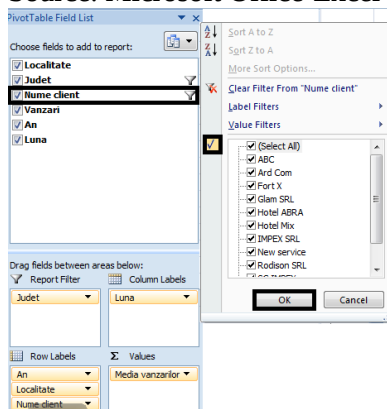


Figure 8: The generation of multiple reports

Source: Microsoft Office-Excel 2013



In figures 10 and 11 we can see the way the average percentages are calculated out of the total of sales, centralized monthly and yearly. We have chosen 2009 and 2010 for the analysis.

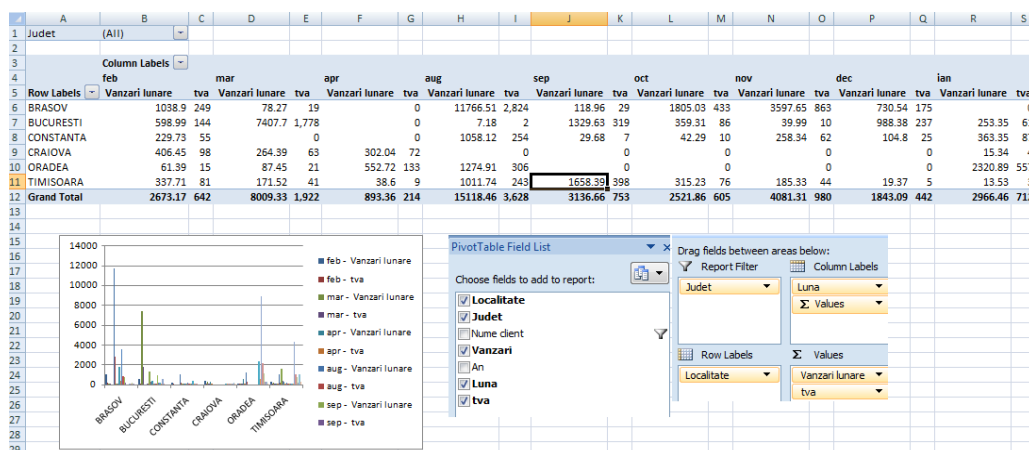


Figure 12: The spreadsheet
Source: Microsoft Office-Excel 2013

In figure 12 we can see the way calculations can be made based on already existing data, with the help of the Calculated Field tools which are made available to the user of the program. To exemplify, we can take an instance in which we are interested in determining the VAT corresponding to the monthly sales for all counties in one table.

In figure 13 we calculate a discount of 20% of the sales and the difference that remains after subtracting the VAT and the sales discount from the sales.

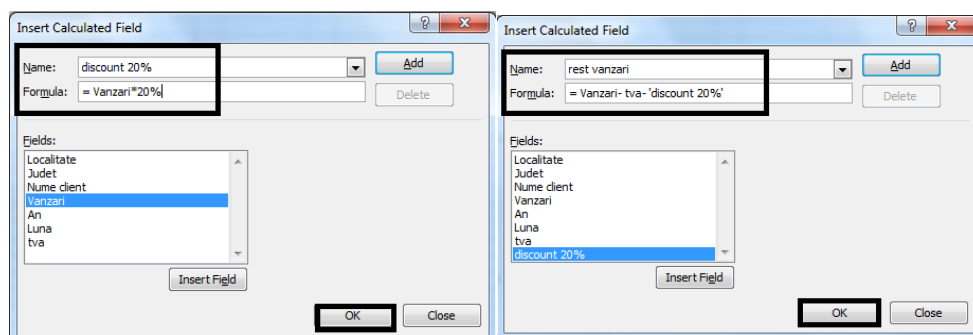


Figure 13: Insertion of new fields calculated with the help of the formulae chosen by the user

Source: Microsoft Office-Excel 2013

In figures 13 and 14, we can see that, apart from pre-defined calculations, new calculation formulae can be made based on the already existent ones from the initial database or based on the new information previously created by us based on predefined formulae as well.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Judet	(All)											
2													
3													
4	Row Labels	Vanzari lunare	tva	Sum of discount 20%	Sum of rest vanzari								
5	BRASOV	19463.78	4,671	3,893	10,900								
6	BUCURESTI	11614.48	2,787	2,323	6,504								
7	CONSTANTA	2143.09	514	429	1,200								
8	CRAIOVA	1295.48	311	259	725								
9	ORADEA	14582.44	3,500	2,916	8,166								
10	TIMISOARA	9929.69	2,383	1,986	5,561								
11	Grand Total	59028.96	14,167	11,806	33,056								
12													
13													
14													

Figure 14: Results

Source: Microsoft Office-Excel 2013

CONCLUSIONS

To conclude, we can say that Microsoft Office pivot tables can be a handy tool in data manipulation and decision making in all types of activities. Hence, various processes can be upgraded due to the conclusions we draw based on this information obtained with reasonable ease, and which could not be reached employing the work of human beings. Hence, this tool turns out to be of real help for all users, even though if they are inexperienced in data manipulation, due to its being quite easy to use, which represents a major advantage.

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