Business Intelligence
Lab Report
On
Data Analysis using Excel

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Introduction:

In this report I would be explaining how I have solved the issue for organisers of Beauty Pegaent contest. Last year they have faced many issues due to the manual scoring which has caused significant delays during the contest.

This year the organisers want it to be happened smoothly without any delays during the contest. They have some requirements to be fulfil so that the contest runs smoothly and effectively. The requirements are:

- Easily input scores as they are entered by the judges
- Calculate weighted scores and ranking quickly and accurately based on multiple criteria

Procedure:

To obtain the above results in Excel I would be using Power Pivot and Power Query to explore the data and visualise them and obtain the specific Pivot table. The Excel data provided to obtain the specific results contain the following data tables:

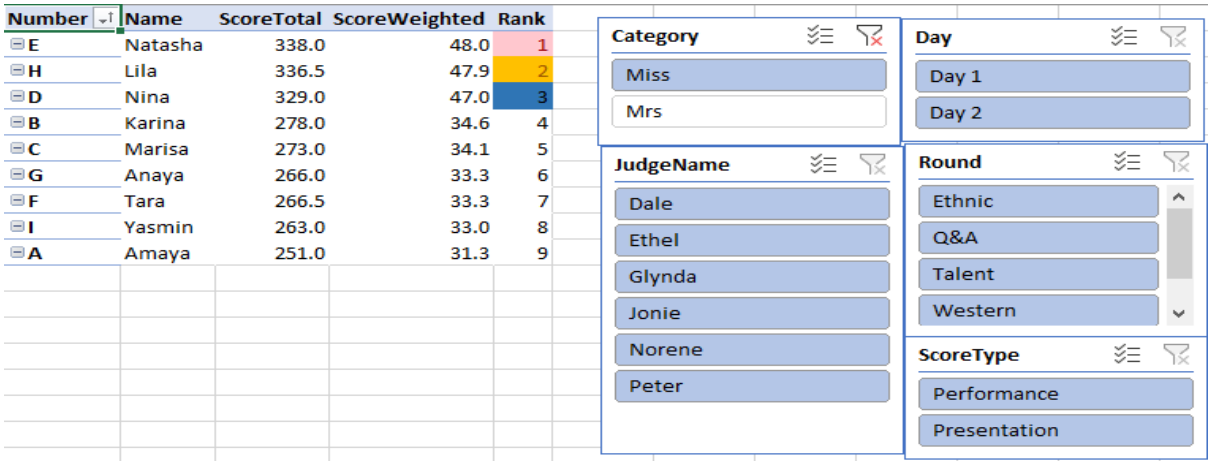
- **Judges:** We have given 6 judges names.
- **Contestants:** The contestants have been divided into two specific category(Miss & Mrs) and based on their category they have been given Number like for Miss category the number start with A and Mrs category numbers start with 1.
- **Rounds:** There would be multiple rounds for the contest and they are been dived into 2 days where top there contestants would be proceeded to Q&A round and based on all the rounds the final winner for each category would be announced. Each round would be having separate weightage based on the weightage the winners would be awarded.
- **Scoring Sheets:** We have been given 6 scoring sheets where the judges have marked their results for each contestant for the rounds.

I would be obtaining the desired results using the Pivot table. The Pivot table would be meeting all the requirements which have been given by the organisers.

The Pivot table would be having the following things:

- Measures: Score Total, ScoreWeighted, Rank
  (Measures in Power Pivot are calculations used in data analysis).
- Slicers: Category (Miss, Mrs), Day (Day1, Day2), Round, ScoreType
  (Slicers are a visual filter in the form of an Interactive button).

The Final winner for the category Miss has been given in the figure 1. The below result has been obtained for the category Miss by choosing the Slicers for the category by including marks given in all the rounds and by all the judges.



Number	Name	ScoreTotal	ScoreWeighted	Rank
E	Natasha	338.0	48.0	1
H	Lila	336.5	47.9	2
D	Nina	329.0	47.0	3
B	Karina	278.0	34.6	4
C	Marisa	273.0	34.1	5
G	Anaya	266.0	33.3	6
F	Tara	266.5	33.3	7
I	Yasmin	263.0	33.0	8
A	Amaya	251.0	31.3	9

Figure 1: Winner for Miss Category

Adding Data to Power Pivot:

The first step is to add all the data in the sheets of Judges, Rounds, Contestants to the data model of Power Pivot. The Power Pivot is used to establish relations between the tables, create data models and perform data analysis [1].

Power Query Editor:

Power Query Editor is used to connect, transform, combine, and share the data. With Power Query we can create queries which are simple and complex based on our needs [2]. In this step we would be choosing the Query and adding the tables Judge1, Judge2, Judge3, Judge4, Judge5 and Judge6 table data to the Power Query editor.

- Now I would be making the first row as the headers for all the tables.
- I would be appending the Queries into one and renaming the Query as Scoring
- A new table would be created where I would be having the data from all the tables and now, I would be cleaning the table by removing the Name column from the table.
- Unpivot all the round columns by choosing Unpivot Columns from the Transform tab. And now I would be renaming the last two columns as “RoundScore” and “ScoreEntered” and Number column as “ContestantNumber”.
- I would be changing the data type of ScoreEntered column to whole number from decimal number.
- The New table would be having four columns there are: Judge, ContestantNumber, RoundScore and ScoreEntered.

The New table looks as follows:

	Judge	ContestantNumber	RoundScore	ScoreEntered
1	1	1	Ethnic Presentation	9
2	1	1	Ethnic Performance	9
3	1	1	Telant Presentation	7
4	1	1	Talent Performance	7
5	1	1	Western Presentation	9
6	1	1	Western Performance	8

Figure 2: Power Query Editor

Now I would be loading the data into the Excel sheets. Then I would be adding the above table to data model from the Power Pivot tab.

Creating Relationships using Power Pivot:

Using the Power Pivot manage option I would be creating our relationships between the data tables which have been added to the data model. Now I would be selecting the Diagram View option from the Power Pivot window. The relations are been created as follows:

- The RoundScore of the Scoring table would be matched with RoundScore of Round table.
- The Judge of scoring table would be matched with JudgeNo of Judge table.
- The ContestantNumber of Scoring table would be matched with Number in the Contestant table.

The relationships for the tables would be looked as follow:

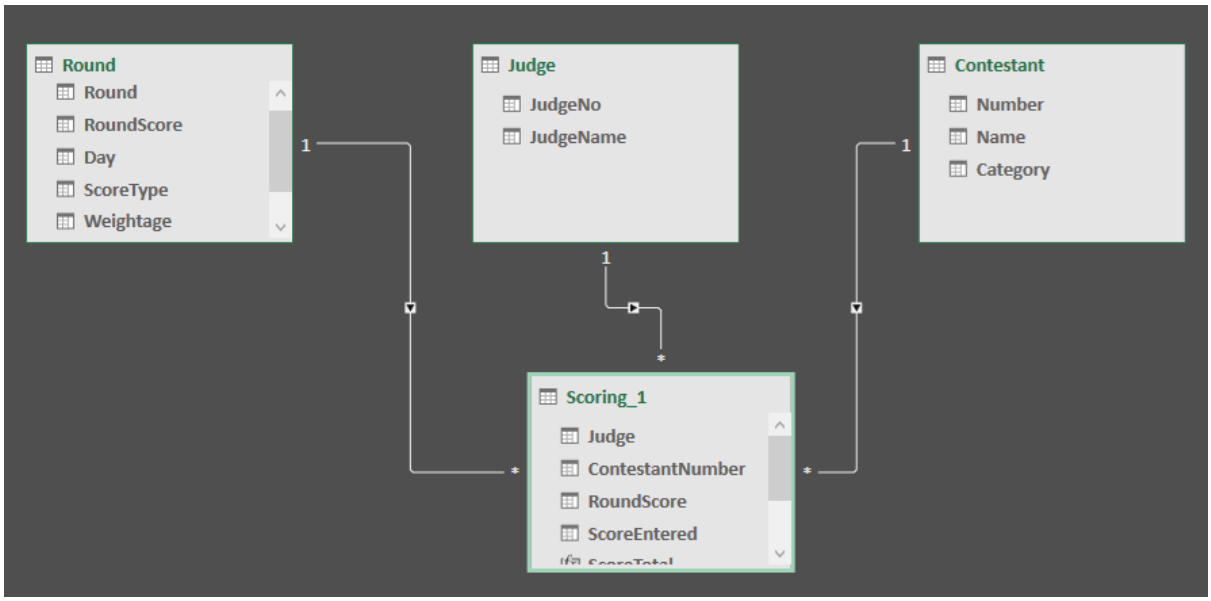


Figure 3: Relationship for the tables

Analysing using Pivot Table:

Now I would be obtaining the Winner results using the Pivot table. Pivot table is a powerful tool to calculate, summarize and analyse the data that lets you see comparisons, patterns, and trends in the data [3].

I have created a new blank sheet and renamed the sheet as "Results". Now I would be adding the Pivot table using the inset option and while creating I would be choosing the data as the data model. Now I would be choosing Number and Name from the Category table and add it to the row. Now we would be crating some measure:

- ScoreTotal: =SUM(Scoring_1[ScoreEntered])
- RoundWeightage: =IF(HASONEVALUE('Round'[RoundScore]),MAX('Round'[Weightage]),BLANK())
- ScoreWeighted: =SUMX(VALUES('Round'[RoundScore]),[RoundWeightage]*[ScoreTotal])
- Rank: =IF(ISBLANK([ScoreWeighted]),BLANK(),RANKX(ALLSELECTED(Contestant),[ScoreWeighted]))

We would be creating ScoreTotal, ScoreWeighted and Rank for the Scoring table and RoundWeightage for round table. Now I would be selecting the sorting option based on the Rank Column. I have done conditional formatting for the better appearance of the results. The final table would be looking as follows:

Number	Name	ScoreTotal	ScoreWeighted	Rank
7	Jasmin	336.0	48.0	1
E	Natasha	338.0	48.0	2
H	Lila	336.5	47.9	3
2	Trisha	333.5	47.9	4
8	Ida	334.5	47.5	5
D	Nina	329.0	47.0	6

Figure 4: Final Winner

Adding Slicers:

Slicers provide buttons that is used to filter data in the tables [4]. I would be adding the required slicers which would be helpful to obtain the required task results.

Results:

A) Which Contestants advance to the Final Round.
To obtain the result I would be choosing the slicer for the round and selecting Q&A as the filter. They are 6 contestants advanced to the final round. They are:

Name	ScoreTotal	ScoreWeighted	Rank
Trisha	49.0	12.3	1
Jasmin	48.0	12.0	2
Natasha	48.0	12.0	2
Ida	46.0	11.5	4
Nina	46.0	11.5	4
Lila	45.0	11.3	6

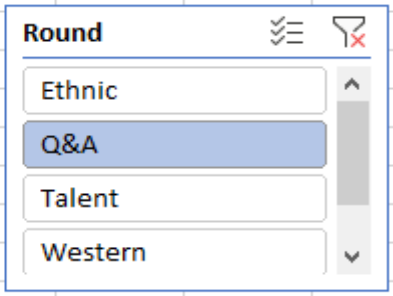


Figure 5: Contestants in the Final Round

B) Overall Winners after the Final Round

The overall winners in the final round would be decided based on the category(Miss, Mrs) by the organisers.

Number	Name	ScoreTotal	ScoreWeighted	Rank
E	Natasha	338.0	48.0	1
H	Lila	336.5	47.9	2
D	Nina	329.0	47.0	3
B	Karina	278.0	34.6	4
C	Marisa	273.0	34.1	5
G	Anaya	266.0	33.3	6

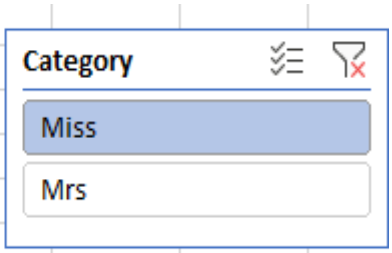


Figure 6: Winners for the Miss Category

Number	Name	ScoreTotal	ScoreWeighted	Rank
7	Jasmin	336.0	48.0	1
2	Trisha	333.5	47.9	2
8	Ida	334.5	47.5	3
4	Ira	282.5	35.2	4
1	Saniya	279.0	34.7	5
9	Sarina	277.0	34.7	6

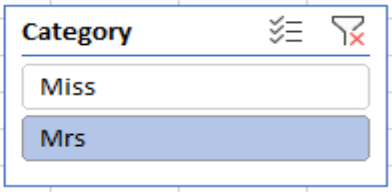
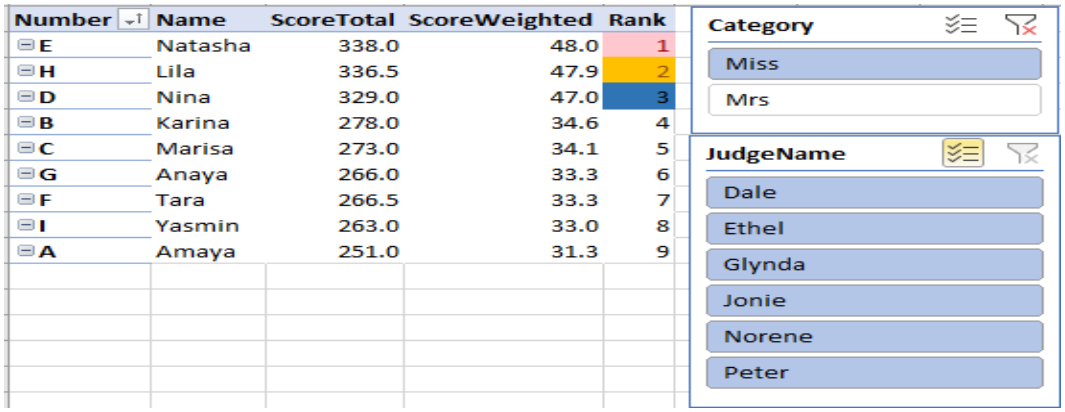


Figure 7: Winners for the Mrs Category

C) Specific awards like Ms. Talent (Based on the scores in the Talent Round)

To obtain the Ms. Talent we would be choosing the filter for the Talent round and the category as Miss. The Ms. Talent award goes to:



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F	Tara	266.5	33.3	7
I	Yasmin	263.0	33.0	8
A	Amaya	251.0	31.3	9

Figure 8: Winner of Miss Talent

Conclusion:

Using the above Pivot table the organisers can modify any score to the contestants and save the file and refresh the Pivot table and the data would be updated and the new results would be posting out without any errors and extra efforts.

Personal Learnings:

This lab project has taught many things. It is a great learning for us to explore the data analysis using the MS Excel.

References

[1] MicroSoft, "Microsoft," [Online]. Available: https://support.office.com/en-us/article/power-pivot-powerful-data-analysis-and-data-modeling-in-excel-a9c2c6e2-cc49-4976-a7d7-40896795d045 [Accessed 18 04 2020].

[2] Microsoft, "Microsoft," [Online]. Available: https://support.office.com/en-us/article/getting-started-with-power-query-7104fbee-9e62-4cb9-a02e-5bfb1a6c536a [Accessed 18 04 2020].

[3] Microsoft, "Microsoft," [Online]. Available: https://support.office.com/en-us/article/create-a-pivottable-to-analyze-worksheet-data-a9a84538-bfe9-40a9-a8e9-f99134456576 [Accessed 18 04 2020].

[4] MicroSoft, "Microsoft," [Online]. Available: https://support.office.com/en-us/article/use-slicers-to-filter-data-249f966b-a9d5-4b0f-b31a-12651785d29d [Accessed 18 04 2020].

[5] Data. Provided, *Excel Data provided,* Lab for the BI.