

Company Acquisition

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Data Analytics Case Study Project

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Problem Statement and Goals Identification

This data analytics project discusses and answers important questions regarding a company acquisition case study. A company acquisition can be defined and comprehended as one company proceeds with purchasing most or all of another company's shares to gain control of that company. The given case study here is as following:

Optiveriance is planning to be merged with PDCL Ltd. Brown, who is the CEO of PDCL, is looking forward to a smooth transition. After multiple rounds of discussion, they have decided to do audit of the business infrastructure of Optiveriance.

Justin who is the Chief Data Officer along with his team started auditing on the following grounds: -

- What are the total sales?
- What is the total quantity?
- What is the profit for the said period and the margin?
- Details Performance of LY (last year) for any selected year.
- Compare the performance vs LY.
- Sales 2yrs ago for any selected year.
- The moving average in terms of profit & sales.
- Quarter wise analysis with a slicer.
- Total sales, profit and % profit shown as combo with card and line chart.
- Show the sales comparison between cumulative performance vs cumulative performance LY using an area chart.
- Top 7 performers in terms of products and customers.
- Performance in terms of regional sales and visualizing it (except bar graph).

Provided Data and Processing Tool

The data is given by the company in the form of excel file consisting of five different sheets. The first sheet reveals the names of the fifty different costumers dealing with the company, the second displays the indices for revenue, profit and cost, the third demonstrates the names of the fourteen different products offered by the company, the fourth includes regional information (seven territories and eighty-five cities in Australia) and the fifth illustrates detailed sales data with order number, date, product, quantity, etc. The excel file containing the data is provided in the github link in reference [1].

Microsoft Power BI Desktop (MPBID) was used for handling this case study. The data in the excel file could be easily imported in the form of tables to MPBID by connecting directly through Get Data Option. The data was clean enough to be analyzed in order to satisfy the main requirements of the given case study. Therefore, no additional modification has been proceeded with before loading it to the MPBID.

Methodology, Procedures, Results and Discussion

The solution which was followed in this report was a step-by-step process going along with the requirements mentioned above in the Problem Statement and Goals Identifications Section. DAX formulas were used to calculate some important measures and columns and displayed in a variety of visuals. In addition, dashboards were developed (with bookmarks to facilitate the viewing process) in order to show the various obtained results and the created visuals. Finally, the complete report was published to Power BI Services and from there published to web as in reference [2].

Note: Visuals are not shared here as they are already available in reference [2].

1- What are the total sales?

Simple DAX formula was used here to calculate the total sales and added as a measure (Total Sales) and displayed after that on a card visual. The DAX formula is as following:

Total Sales = SUM(Sales[Total Revenue]) and the outcome was around 154.57 million.

2- What is the total quantity?

Again, a simple DAX formula was implemented to compute the total quantity and added as a measure (Total Quantity) and presented on a card visual.

Total Quantity = SUM(Sales[Order Quantity]) and the outcome was about 68 thousands.

3- What is the profit for the said period and its margin?

Before calculating the profit, the total cost was calculated by:

Total Cost = SUMX(Sales, Sales[Order Quantity] * Sales[Total Unit Cost]). The total cost was nearly 79 million.

Two DAX formulas were used after that to find the profit and the margin as following:

Total Profit = [Total Sales] - [Total Cost] (approximately 57.79 million).

Profit Margin = ([Total Sales] - [Total Cost]) / [Total Sales] (around 37.39%).

A slicer was added with date option (year) in order to be able to choose and switch between the different periods and view the calculated values.

4- Details Performance of LY (last year) for any selected year.

In order to achieve this task, adding a Date Table (taking in consideration the order date available in Sale Tables) was required. A new table was generated from the Modelling Section. The following DAX formula were used to accomplish such task:

Date = CALENDAR("1/1/2014", "31/12/2016")

This added automatically a date column to the new generated Date Table as well. Next, the new Date Table was marked as a date table from the Table Tools Option. Additional columns were added to the Date Table representing the year, quarter and month and week numbers and names. Then, the month and week names were sorted based on the month and week numbers. The month and week numbers were deleted after that as they were not required in further work. Finally, one-to-many connections have been established between the dimension and the fact tables. All materials related to this project work are available in the Github link provided in reference [1] including the pbix file.

The last year performance in terms of total sales and profit was computed by the formulas mentioned below and visualized by cards. Moreover, the variances in Sales and Profit were also computed and all of these new measures we organized under a new table named Time Intelligence (Note: the other measures were organized under a different new table named Important Measures).

Sales LY = CALCULATE([Total Sales], DATEADD('Date'[Date], -1, YEAR))

Profit LY = CALCULATE([Total Profit], DATEADD('Date'[Date], -1, YEAR))

From the slicer which was created previously, if year 2016 is selected, for example, the numbers which will be displayed on the cards for LY Sales and LY Profit are 59.39 million and 22.32 million, respectively.

5- Compare the performance vs LY.

Here, only one area chart was developed to show the profit performance for 2016 and compared with the last year (2015) performance. The figure can be found in the link given in reference [2]. In July, the profit in 2015 surpassed significantly the profit from 2016. However, as an overall trend, the two trends were fluctuating between 2.1 million and 1.4 million over the twelve months.

6- Sales 2yrs ago for any selected year.

The sales for the last two years from 2016 was calculated as following:

Sales 2yrs Ago = CALCULATE([Total Sales], DATEADD('Date'[Date], -2, YEAR))

It was visualized by a card and displayed a value of 35.04 million.

7- The moving average in terms of profit & sales.

Three months period was chosen for the moving averages and were computed as below and the outputs were presented in a table:

Profit(moving_avg_3_months) = CALCULATE (AVERAGEX (Sales, Sales[Total Revenue] - (Sales[Total Unit Cost] * Sales[Order Quantity])), DATESINPERIOD ('Date'[Date], LASTDATE ('Date'[Date]), -3, MONTH))

And

Sales(moving_avg_3_months) = CALCULATE (AVERAGEX (Sales, Sales[Total Revenue]), DATESINPERIOD ('Date'[Date], LASTDATE ('Date'[Date]), -3, MONTH))

8- Quarter wise analysis with slicer.

This requirement was achieved simply by adding a slicer containing the four quarters as a dropdown menu.

9- Total sales, profit and % profit can be shown as combo with card and line chart.

A line graph was developed showing the total sales and the profit. On the other hand, the profit margin in percentage was already calculated before and displayed in a card. In this current case, we combined them together where the card was put at the top right of the line chart. In general, the trends showed a normal increase from 2014 to 2015 and remained almost stable until 2016 in terms of sales and profit.

10- Show the sales comparison between cumulative performance vs cumulative performance LY using an area chart.

The following two DAX formulas were employed to find cumulative performance and cumulative performance LY and then an area chart was developed to present the results. A slicer was added as well with years in order to choose among them and compare the outcomes.

Cumulative Performance(sales) = TOTALYTD([Total Sales], 'Date'[Date])

Cumulative Performance LY(sales) = TOTALYTD([Total Sales], SAMEPERIODLASTYEAR('Date'[Date]))

11- Top 7 performers in terms of products and customers.

Two stacked bar charts were introduced here to present the products and the customers and a filter on the two visuals were applied as well to show only the top seven products and customers.

12- Performance in terms of regional sales and visualizing it (except bar graph).

A map visual was used here to show the regional sales. Dots with circle shape and different colors and sizes were introduced to represent the total sales in different cities.

Conclusion

The main objective of this current analytical project was to study a company acquisition case. The concerned companies provided data in the form of excel sheets and requested to accomplish some specific requirements before proceeding with the acquisition plan. Microsoft Power BI Desktop (visualization tool) was employed to solve the business problem. DAX formulas were implemented to compute several significant measures and columns and showed in different visuals. Moreover, dashboards were created with bookmarks in order to show the variety of acquired outcomes and the generated visuals. The entire report was published eventually to Power BI Services and as a web page to facilitate the process of sharing.

References

- [1] Zia-Said, <https://github.com/Zia-Said/Company-Acquisition-Data-Analytics-Case-Study-Project->. 2021.
- [2] “Microsoft Power BI.” <https://app.powerbi.com/view?r=eyJrIjojOGExYWVkZDctYzM1MC00Zjc5LWI4NmUtZDhjNGZkY2JmODUwIiwidCI6ImRlMmVhZmI0LTkxOGEtNGE5MC04NTEwLWVhZDA3Yjc0YWQ2OCJ9> (accessed Jan. 04, 2021).