Sri Lanka Institute of Information Technology

Assignment 2

Dara Warehouse & Business Intelligence

2021

Submitted By:

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Contents

Step 1: Data source for the assignment 2

The selected data source is a collection of transactional data. The link to the source data set is mentioned below:

https://www.kaggle.com/rdoume/beerreviews

Modifications were done accordingly to the data set derived from the source . This Dataset reflects Customer reviews on beers in different breweries.

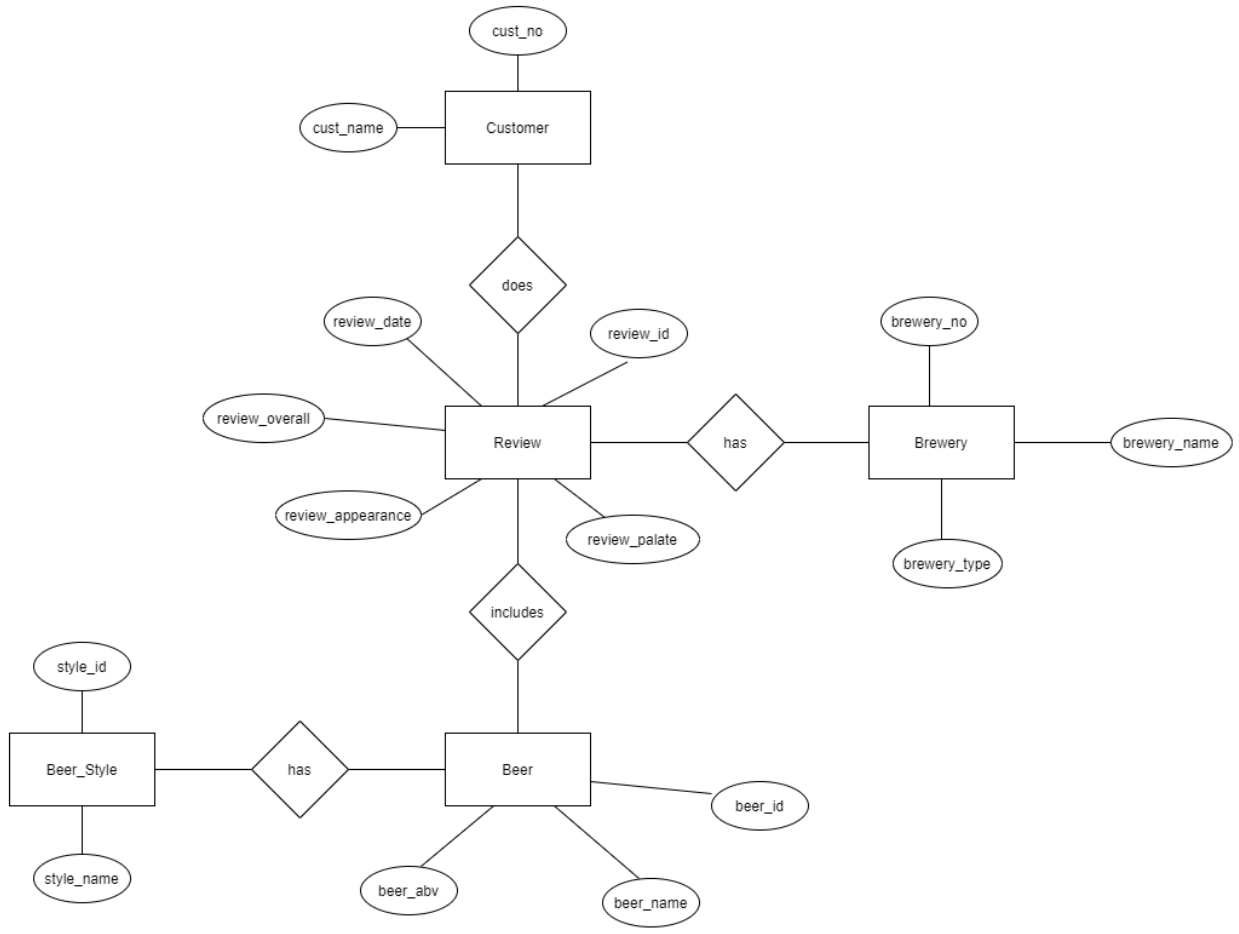
The two main sources are listed below:

- SQL Database .
- One text file – Customer Data.

Also, the below mentioned CSV files were imported to the SQL source database.

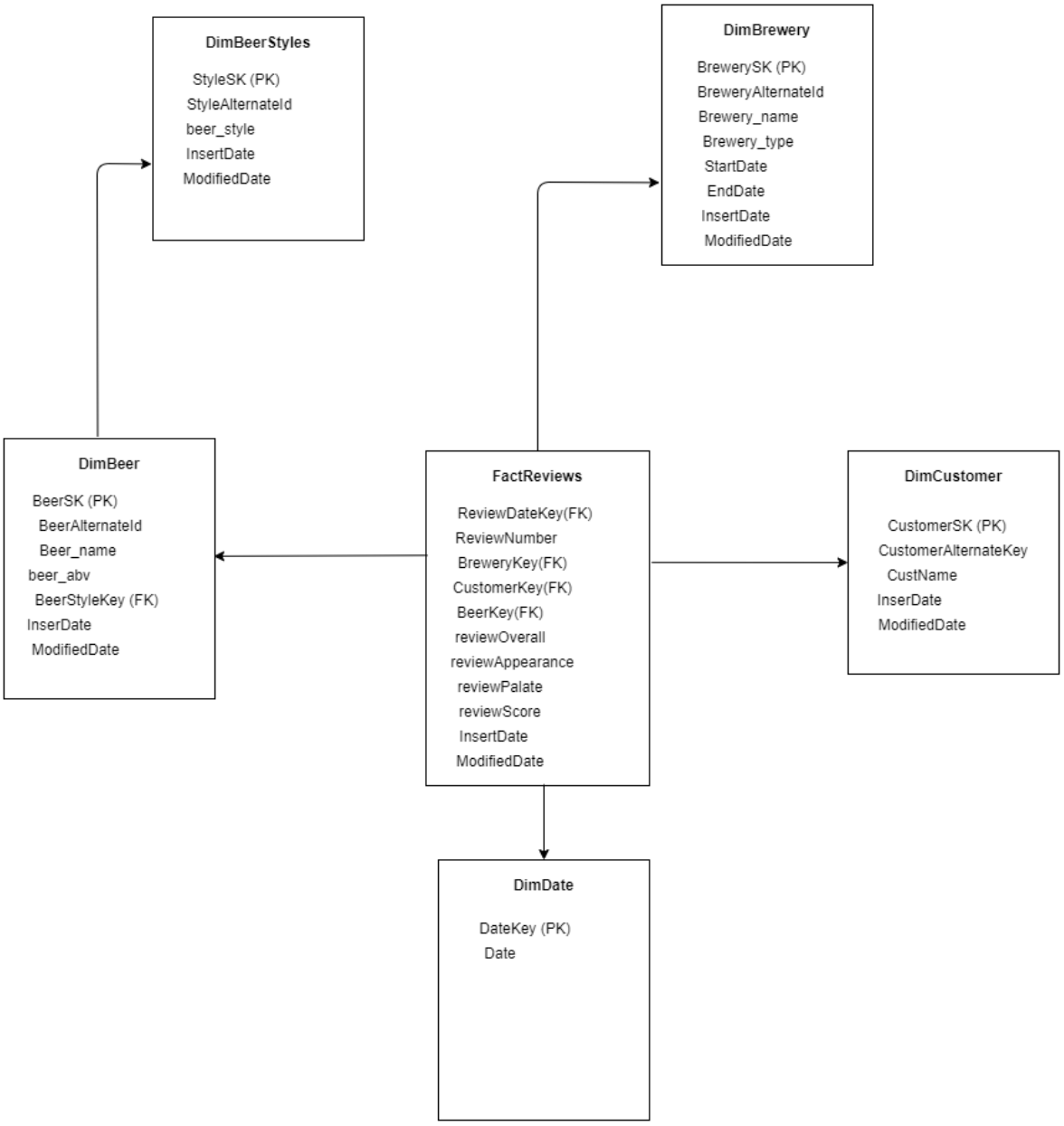
- Beer Details.
- Brewery Details.
- Beer Style Details.
- Review Details.

ER Diagram



Above diagram shows the connection between entities

Data Warehouse Design

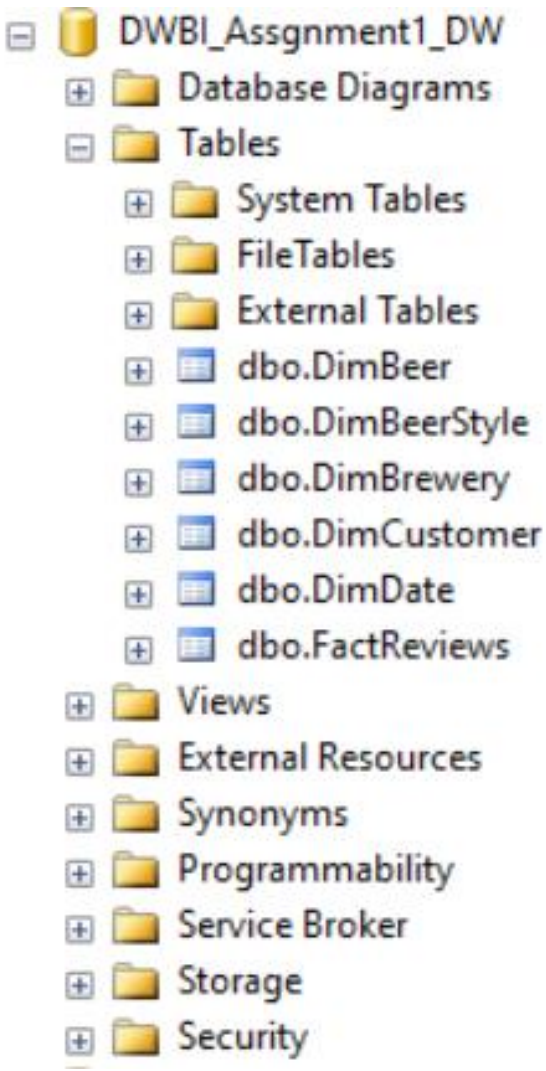


Snowflake schema is used to design the Datawarehouse design. There is one fact table as transactions and 5 dimensions. Review per Customer was considered as the grain.

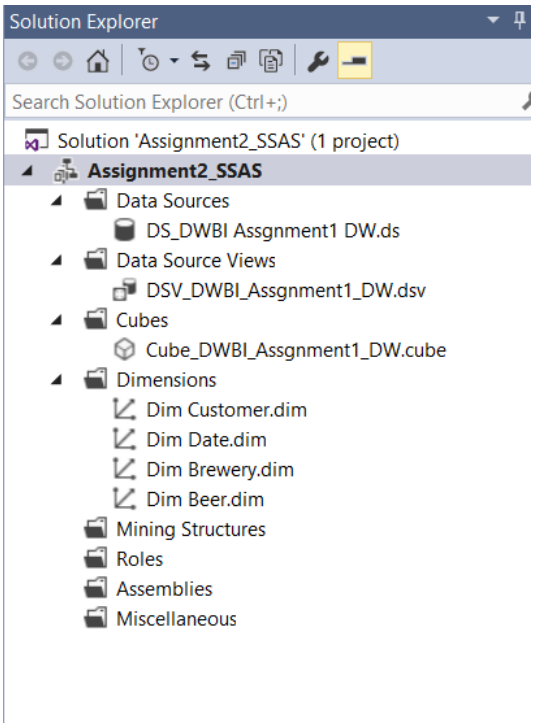
<u>Assumptions</u>

- Brewery Dimension is considered as a Slowly changing dimension

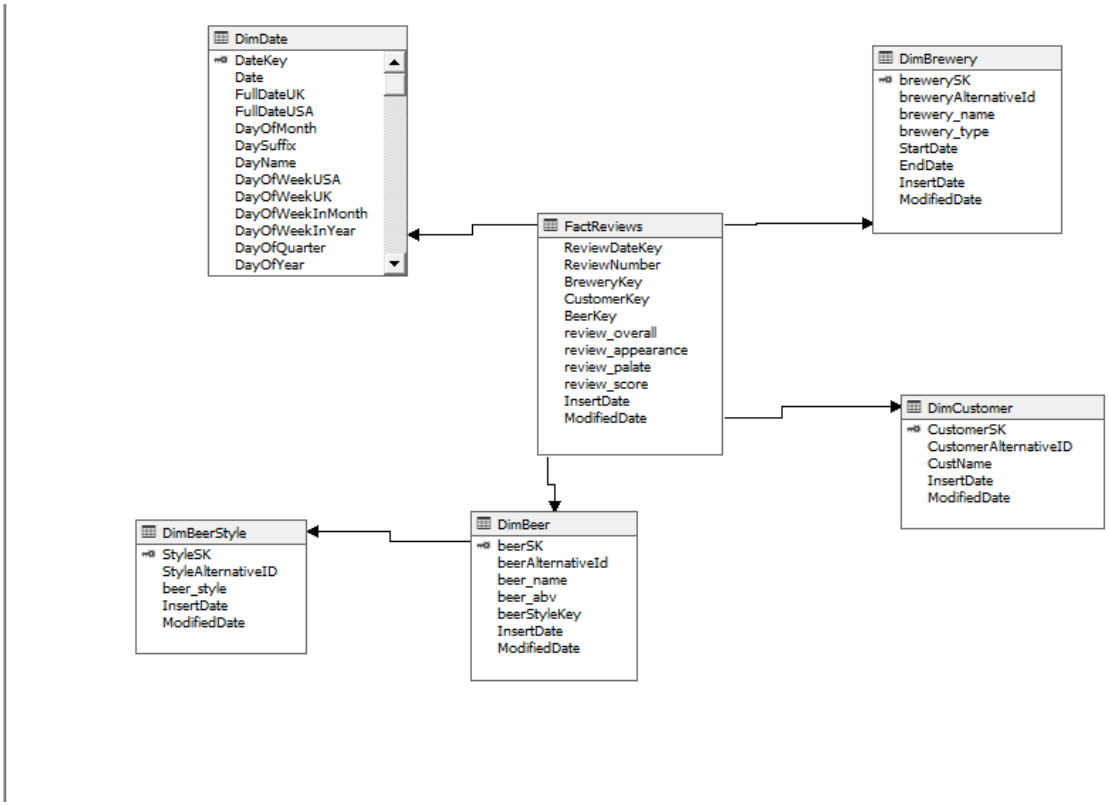
I used the Data Warehouse I implemented and loaded with data in Assignment 1 as the source for the Assignment 2.



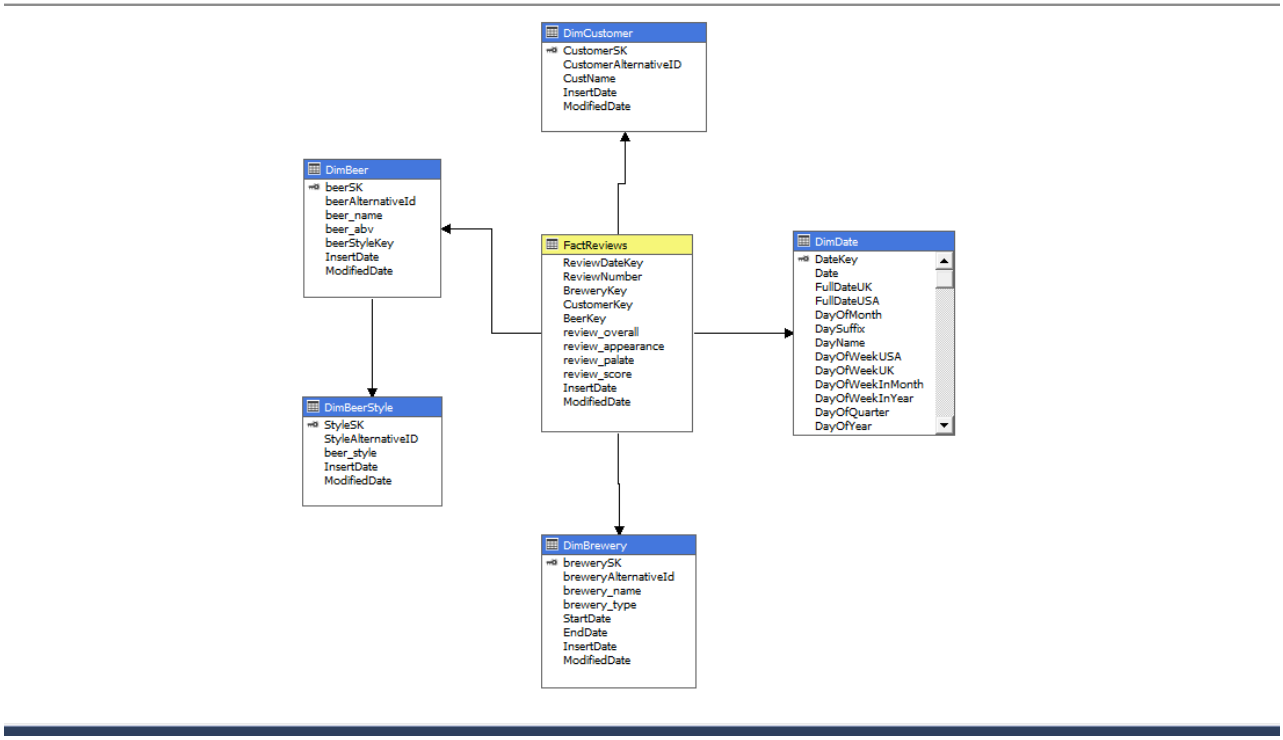
Step 2: SSAS Cube implementation



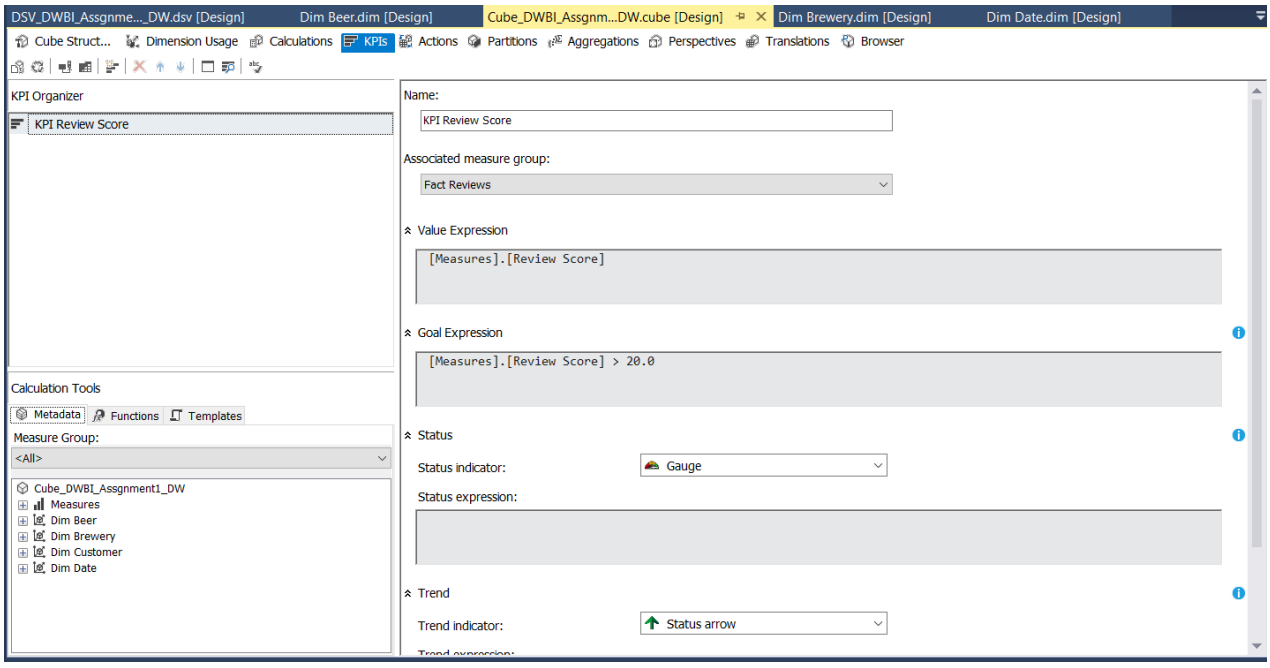
- First, Created a new Analysis Services Multidimensional and Data Mining project in SSAS. And created a Data Source and a Data Source View as shown below.



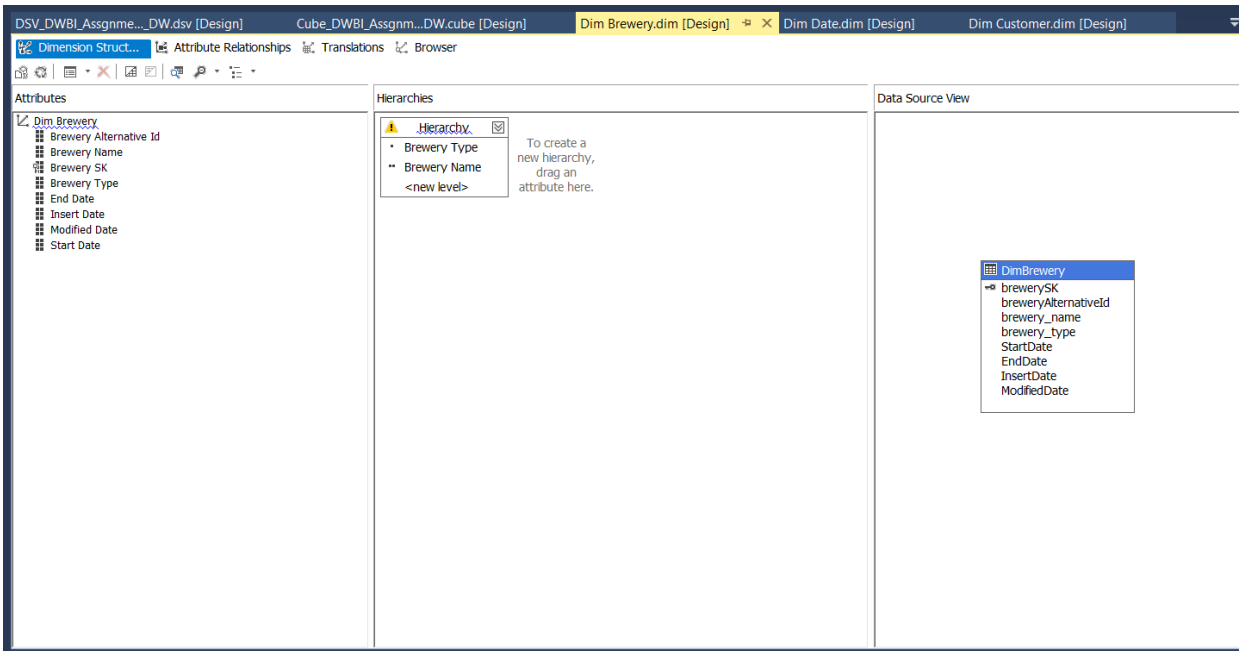
- Then, Designed the cube including necessary measures in the FactReviews. Also included a hierarchy in DimBrewery and the location hierarchies in DimBeer & 2 hierarchies in DimDate.

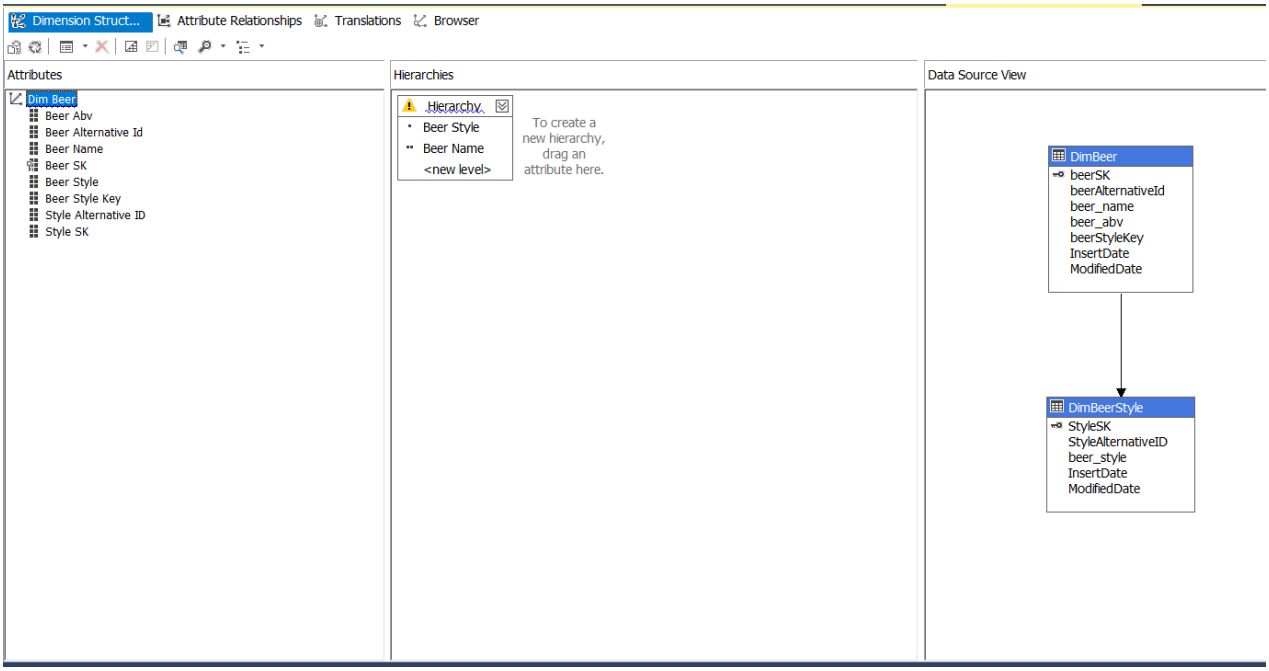


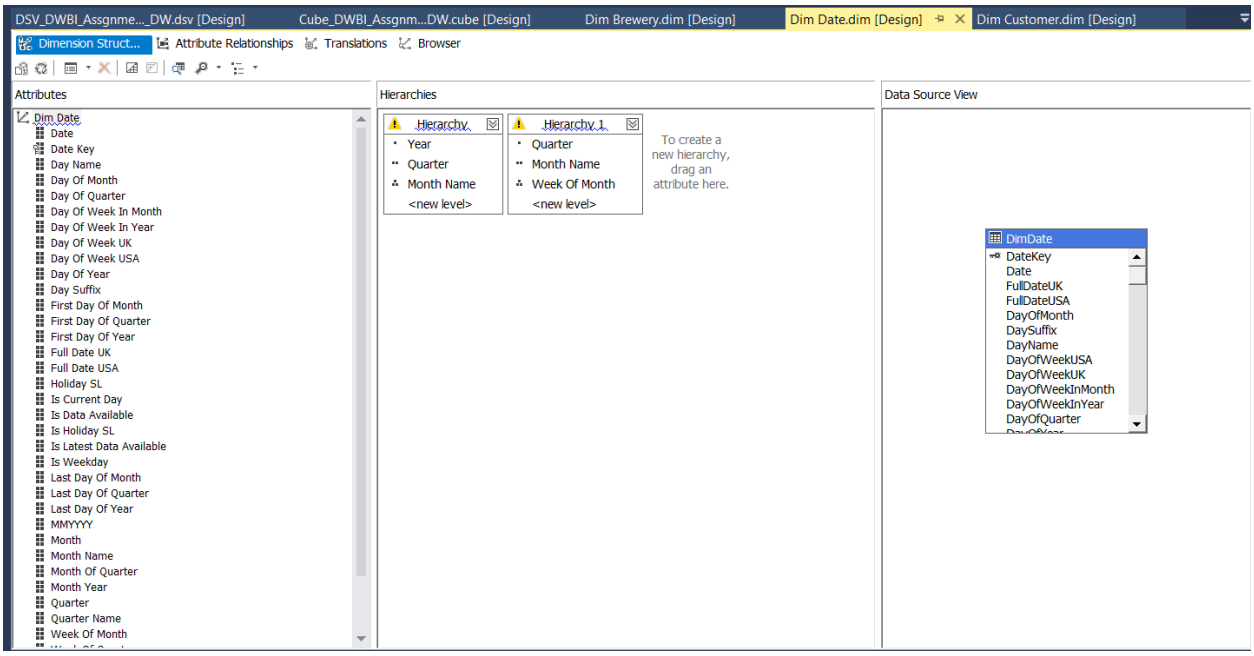
To Create cube below KPI is used



Above mentioned hierarchies ,





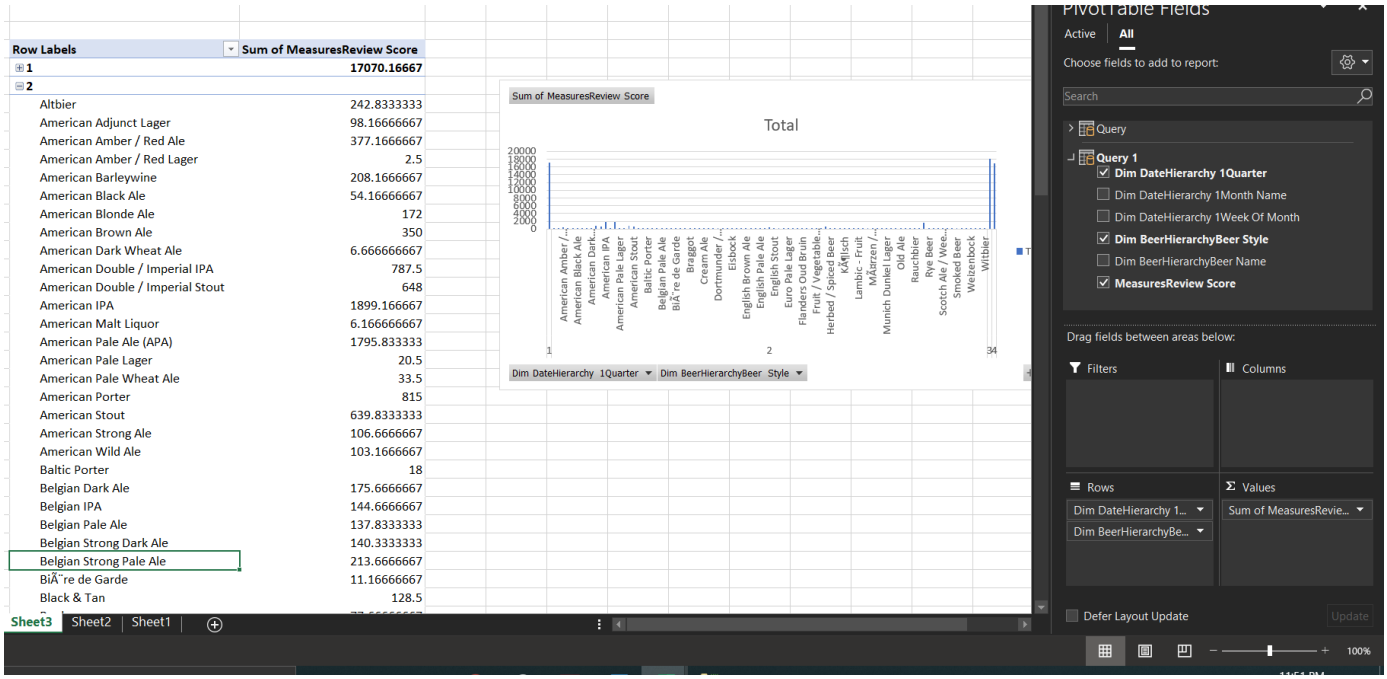

DSV_DWBI_Assgnme..._DW.dsv [Design]
Cube_DWBI_Assgnm...DW.cube [Design]
Dim Brewery.dim [Design]
Dim Date.dim [Design]
Dim Customer.dim [Design]
Dimension Struct...
Attribute Relationships
Translations
Browser
Attributes
Hierarchies
Data Source View
Dim Date
Date
Date Key
Day Name
Day Of Month
Day Of Quarter
Day Of Week In Month
Day Of Week In Year
Day Of Week UK
Day Of Week USA
Day Of Year
Day Suffix
First Day Of Month
First Day Of Quarter
First Day Of Year
Full Date UK
Full Date USA
Holiday SL
Is Current Day
Is Data Available
Is Holiday SL
Is Latest Data Available
Is Weekday
Last Day Of Month
Last Day Of Quarter
Last Day Of Year
MMYYYY
Month
Month Name
Month Of Quarter
Month Year
Quarter
Quarter Name
Week Of Month
Hierarchy
Year
Quarter
Month Name
<new level>
Hierarchy 1
Quarter
Month Name
Week Of Month
<new level>
To create a new hierarchy, drag an attribute here.
DimDate
DateKey
Date
FullDateUK
FullDateUSA
DayOfMonth
DaySuffix
DayName
DayOfWeekUSA
DayOfWeekUK
DayOfWeekInMonth
DayOfWeekInYear
DayOfQuarter

Step 3: Demonstration of OLAP operations

Connected the excel workbooks to the cube using power pivot & MDX queries and created below operations.

1.Roll-up

- Climbing up a hierarchy of a dimension to aggregate data means the Rollup.

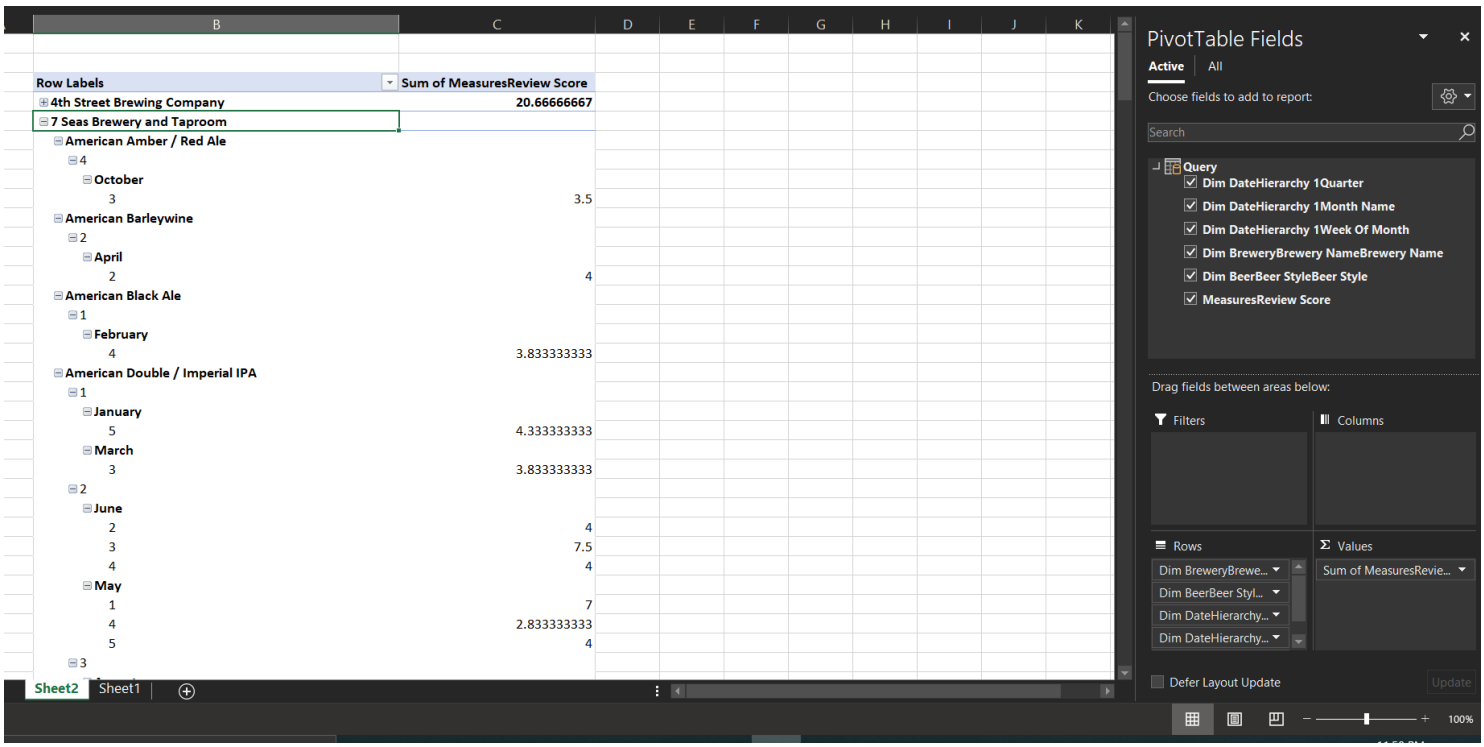


Row Labels	Sum of MeasuresReview Score
1	17070.16667
2	
Altbier	242.8333333
American Adjunct Lager	98.16666667
American Amber / Red Ale	377.1666667
American Amber / Red Lager	2.5
American Barleywine	208.1666667
American Black Ale	54.16666667
American Blonde Ale	172
American Brown Ale	350
American Dark Wheat Ale	6.666666667
American Double / Imperial IPA	787.5
American Double / Imperial Stout	648
American IPA	1899.166667
American Malt Liquor	6.166666667
American Pale Ale (APA)	1795.833333
American Pale Lager	20.5
American Pale Wheat Ale	33.5
American Porter	815
American Stout	639.8333333
American Strong Ale	106.6666667
American Wild Ale	103.1666667
Baltic Porter	18
Belgian Dark Ale	175.6666667
Belgian IPA	144.6666667
Belgian Pale Ale	137.8333333
Belgian Strong Dark Ale	140.3333333
Belgian Strong Pale Ale	213.6666667
BiÃ¨re de Garde	11.16666667
Black & Tan	128.5

- In above sheet shows Review Score details according to the Beer Style (top level of the Beer hierarchy) and the Reviewed year (top level of the date hierarchy)

2.Drill-down

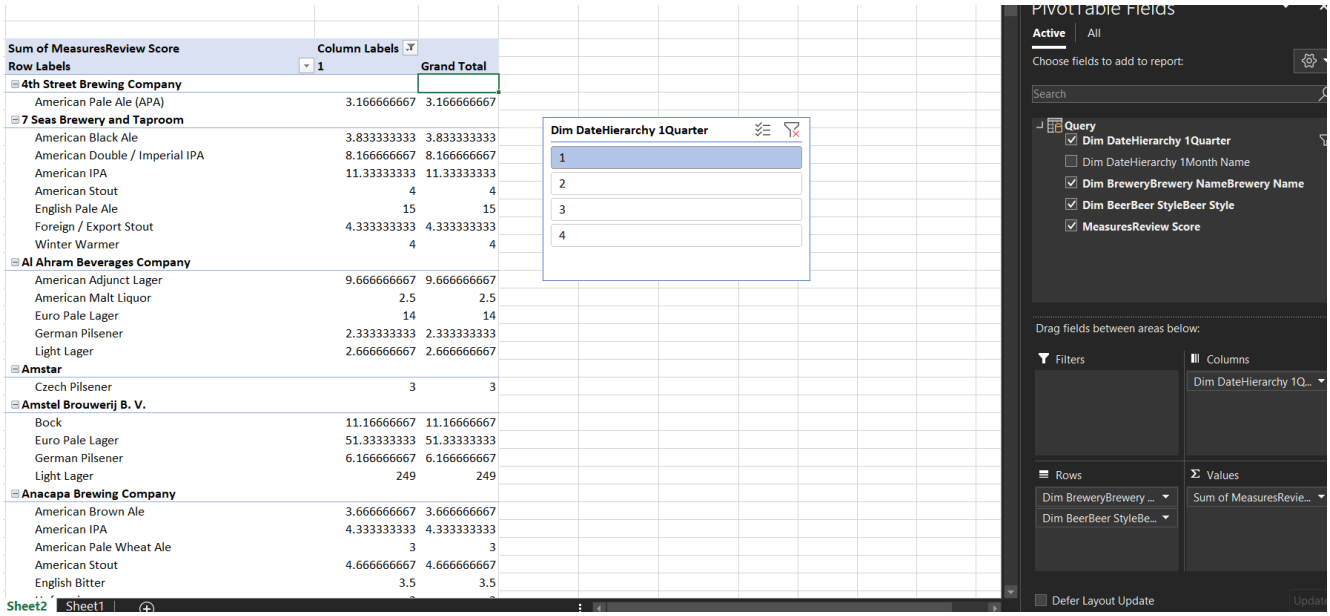
- Stepping down a hierarchy of a dimension allowing navigation through details means the Drill-down



Row Labels	Sum of MeasuresReview Score
4th Street Brewing Company	20.66666667
7 Seas Brewery and Taproom	
American Amber / Red Ale	
4	
October	
3	3.5
American Barleywine	
2	
April	
2	4
American Black Ale	
1	
February	
4	3.833333333
American Double / Imperial IPA	
1	
January	
5	4.333333333
March	
3	3.833333333
2	
June	
2	4
3	7.5
4	4
May	
1	7
4	2.833333333
5	4
3	

- In above sheet shows Review Score details according to the Brewery Name and the reviewed date as quarter month and week (hierarchy = quarter → monthname →week).
- Can Drill-down from quater to month name to view Review details

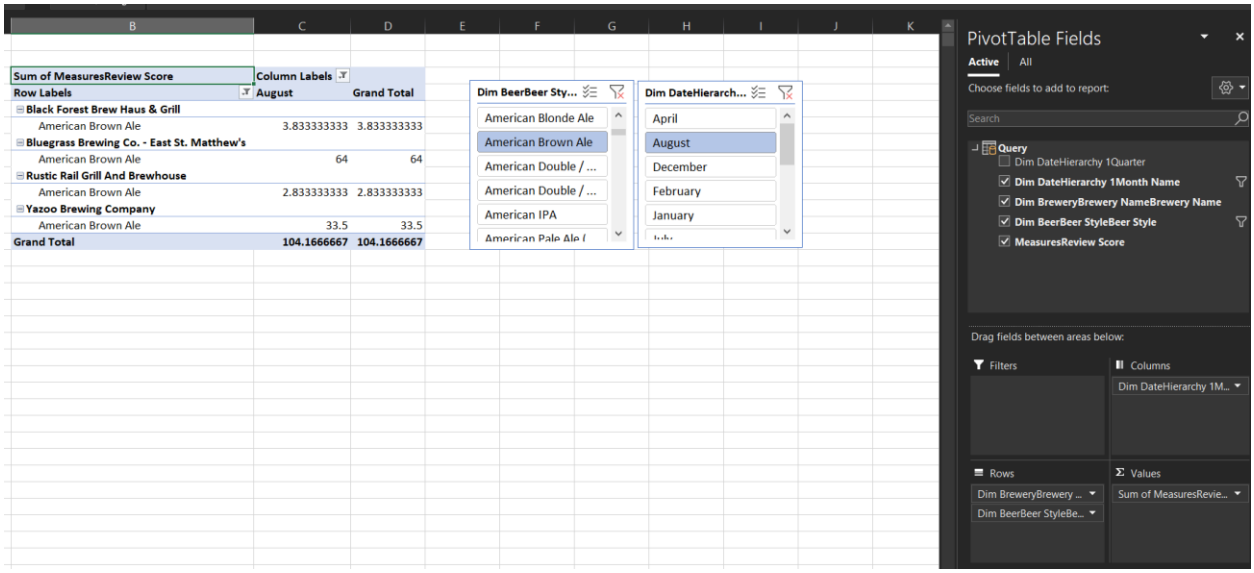
3.Slice



Sum of MeasuresReview Score	Column Labels	
Row Labels	1	Grand Total
4th Street Brewing Company		
American Pale Ale (APA)	3.166666667	3.166666667
7 Seas Brewery and Taproom		
American Black Ale	3.833333333	3.833333333
American Double / Imperial IPA	8.166666667	8.166666667
American IPA	11.33333333	11.33333333
American Stout	4	4
English Pale Ale	15	15
Foreign / Export Stout	4.333333333	4.333333333
Winter Warmer	4	4
Al Ahram Beverages Company		
American Adjunct Lager	9.666666667	9.666666667
American Malt Liquor	2.5	2.5
Euro Pale Lager	14	14
German Pilsener	2.333333333	2.333333333
Light Lager	2.666666667	2.666666667
Amstar		
Czech Pilsener	3	3
Amstel Brouwerij B. V.		
Bock	11.16666667	11.16666667
Euro Pale Lager	51.33333333	51.33333333
German Pilsener	6.166666667	6.166666667
Light Lager	249	249
Anacapa Brewing Company		
American Brown Ale	3.666666667	3.666666667
American IPA	4.333333333	4.333333333
American Pale Wheat Ale	3	3
American Stout	4.666666667	4.666666667
English Bitter	3.5	3.5

- This report displays total Review Score details for the Breweries sliced by the Reviewed quarter.

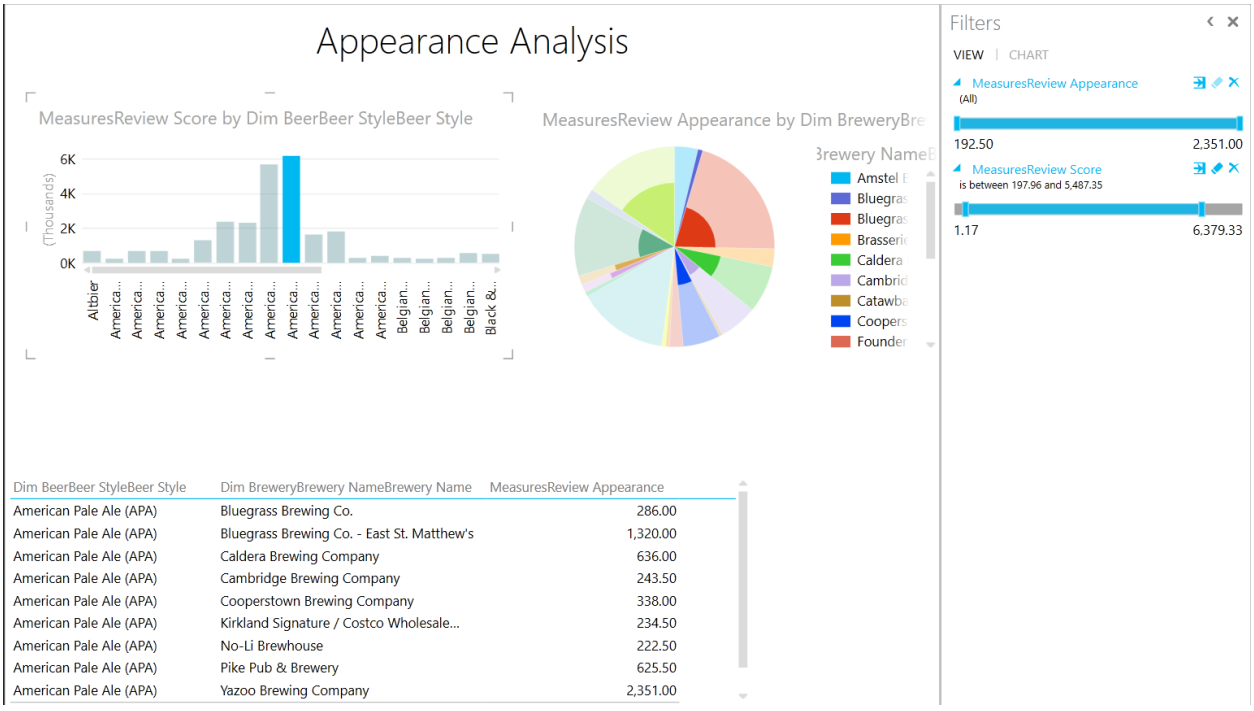
4.Dice



Sum of MeasuresReview Score	Column Labels	
Row Labels	August	Grand Total
Black Forest Brew Haus & Grill		
American Brown Ale	3.833333333	3.833333333
Bluegrass Brewing Co. - East St. Matthew's		
American Brown Ale	64	64
Rustic Rail Grill And Brewhouse		
American Brown Ale	2.833333333	2.833333333
Yazoo Brewing Company		
American Brown Ale	33.5	33.5
Grand Total	104.1666667	104.1666667

- This report displays total Review Score details sliced by Beer Style & Reviewed Month.

5.Pivot

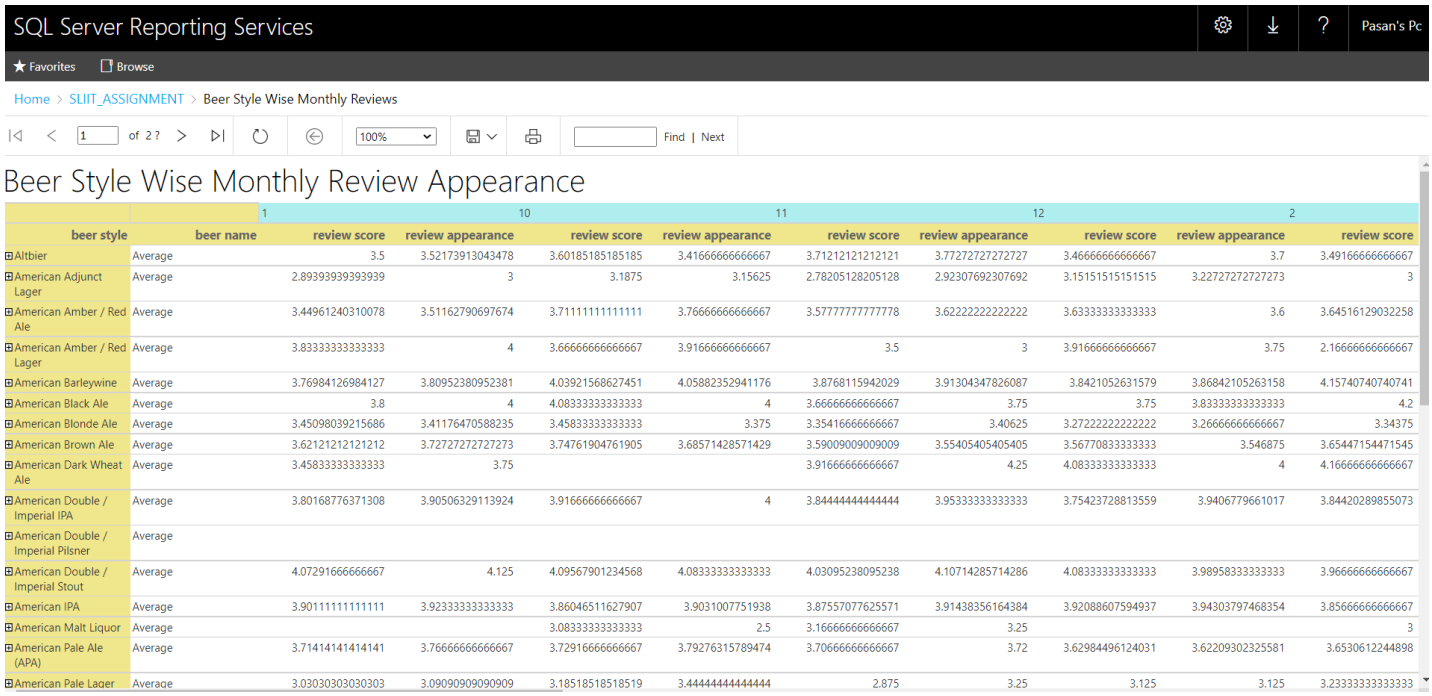


Dim BeerBeer StyleBeer Style	Dim BreweryBrewery NameBrewery Name	MeasuresReview Appearance
American Pale Ale (APA)	Bluegrass Brewing Co.	286.00
American Pale Ale (APA)	Bluegrass Brewing Co. - East St. Matthew's	1,320.00
American Pale Ale (APA)	Caldera Brewing Company	636.00
American Pale Ale (APA)	Cambridge Brewing Company	243.50
American Pale Ale (APA)	Cooperstown Brewing Company	338.00
American Pale Ale (APA)	Kirkland Signature / Costco Wholesale...	234.50
American Pale Ale (APA)	No-Li Brewhouse	222.50
American Pale Ale (APA)	Pike Pub & Brewery	625.50
American Pale Ale (APA)	Yazoo Brewing Company	2,351.00

- Here we can rotate the data axes to provide a substitute presentation of data.

Step 4: SSRS Reports

Report 1: Report with a matrix

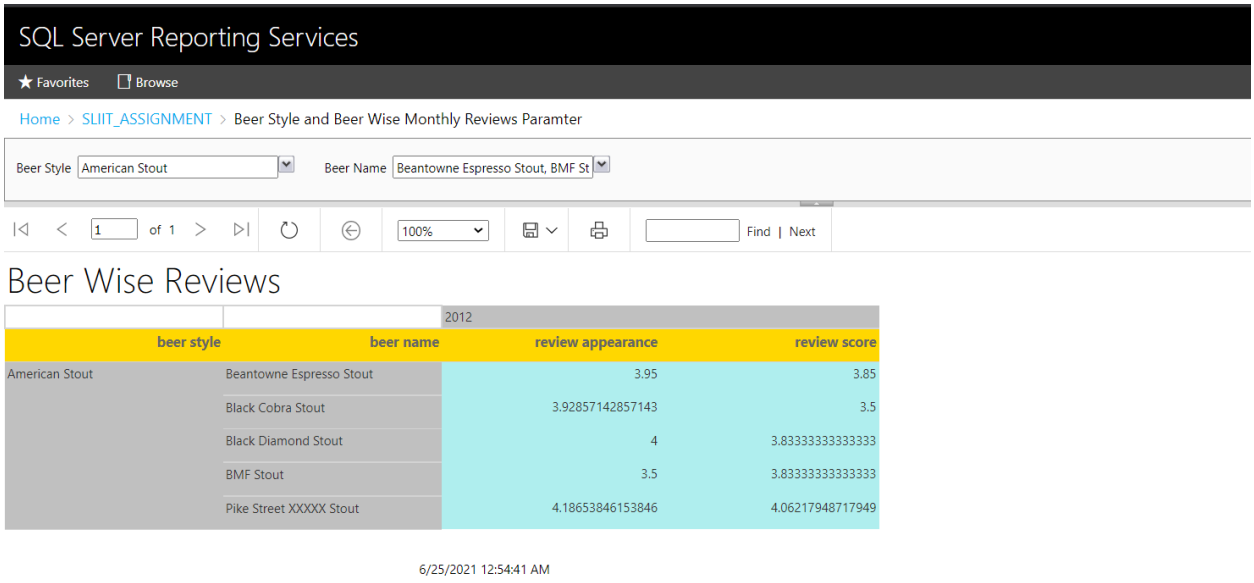


Beer Style Wise Monthly Review Appearance

		1	10		11		12		2	
beer style	beer name	review score	review appearance	review score	review appearance	review score	review appearance	review score	review appearance	review score
Altbier	Average	3.5	3.52173913043478	3.60185185185185	3.41666666666667	3.71212121212121	3.77272727272727	3.46666666666667	3.7	3.49166666666667
American Adjunct Lager	Average	2.89393939393939	3	3.1875	3.15625	2.78205128205128	2.92307692307692	3.15151515151515	3.22727272727273	3
American Amber / Red Ale	Average	3.44961240310078	3.51162790697674	3.71111111111111	3.76666666666667	3.57777777777778	3.62222222222222	3.63333333333333	3.6	3.64516129032258
American Amber / Red Lager	Average	3.83333333333333	4	3.66666666666667	3.91666666666667	3.5	3	3.91666666666667	3.75	2.16666666666667
American Barleywine	Average	3.76984126984127	3.80952380952381	4.03921568627451	4.05882352941176	3.8768115942029	3.91304347826087	3.8421052631579	3.86842105263158	4.15740740740741
American Black Ale	Average	3.8	4	4.08333333333333	4	3.66666666666667	3.75	3.75	3.83333333333333	4.2
American Blonde Ale	Average	3.45098039215686	3.41176470588235	3.45833333333333	3.375	3.35416666666667	3.40625	3.27222222222222	3.26666666666667	3.34375
American Brown Ale	Average	3.62121212121212	3.72727272727273	3.74761904761905	3.68571428571429	3.59009009009009	3.55405405405405	3.56770833333333	3.546875	3.65447154471545
American Dark Wheat Ale	Average	3.45833333333333	3.75			3.91666666666667	4.25	4.08333333333333	4	4.16666666666667
American Double / Imperial IPA	Average	3.80168776371308	3.90506329113924	3.91666666666667	4	3.84444444444444	3.95333333333333	3.75423728813559	3.9406779661017	3.84420289855073
American Double / Imperial Pilsner	Average									
American Double / Imperial Stout	Average	4.07291666666667	4.125	4.09567901234568	4.08333333333333	4.03095238095238	4.10714285714286	4.08333333333333	3.98958333333333	3.96666666666667
American IPA	Average	3.90111111111111	3.92333333333333	3.86046511627907	3.9031007751938	3.87557077625571	3.91438356164384	3.92088607594937	3.94303797468354	3.85666666666667
American Malt Liquor	Average			3.08333333333333	2.5	3.16666666666667	3.25			3
American Pale Ale (APA)	Average	3.71414141414141	3.76666666666667	3.72916666666667	3.79276315789474	3.70666666666667	3.72	3.62984496124031	3.62209302325581	3.6530612244898
American Pale Lager	Average	3.03030303030303	3.09090909090909	3.18518518518519	3.44444444444444	2.875	3.25	3.125	3.125	3.23333333333333

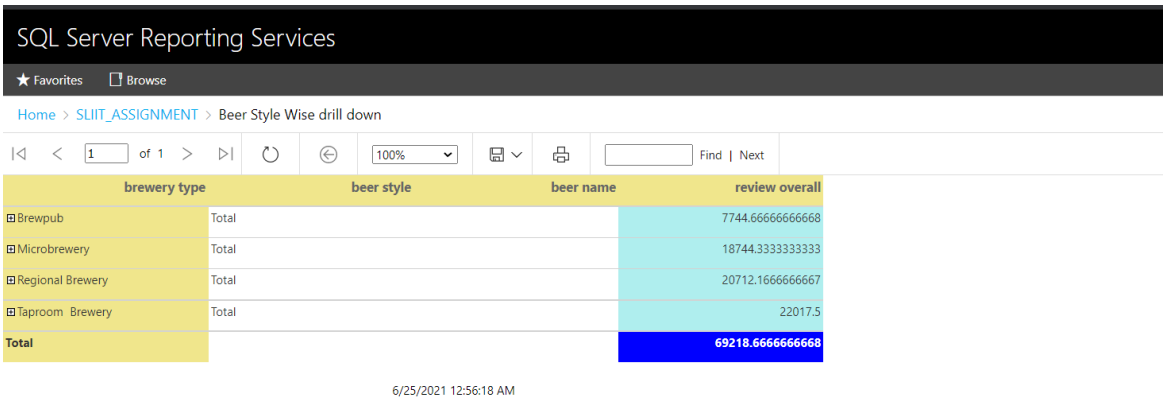
- Here we can see monthly wise Review details in different Beer Styles.

Report 2: Report with more than one parameter

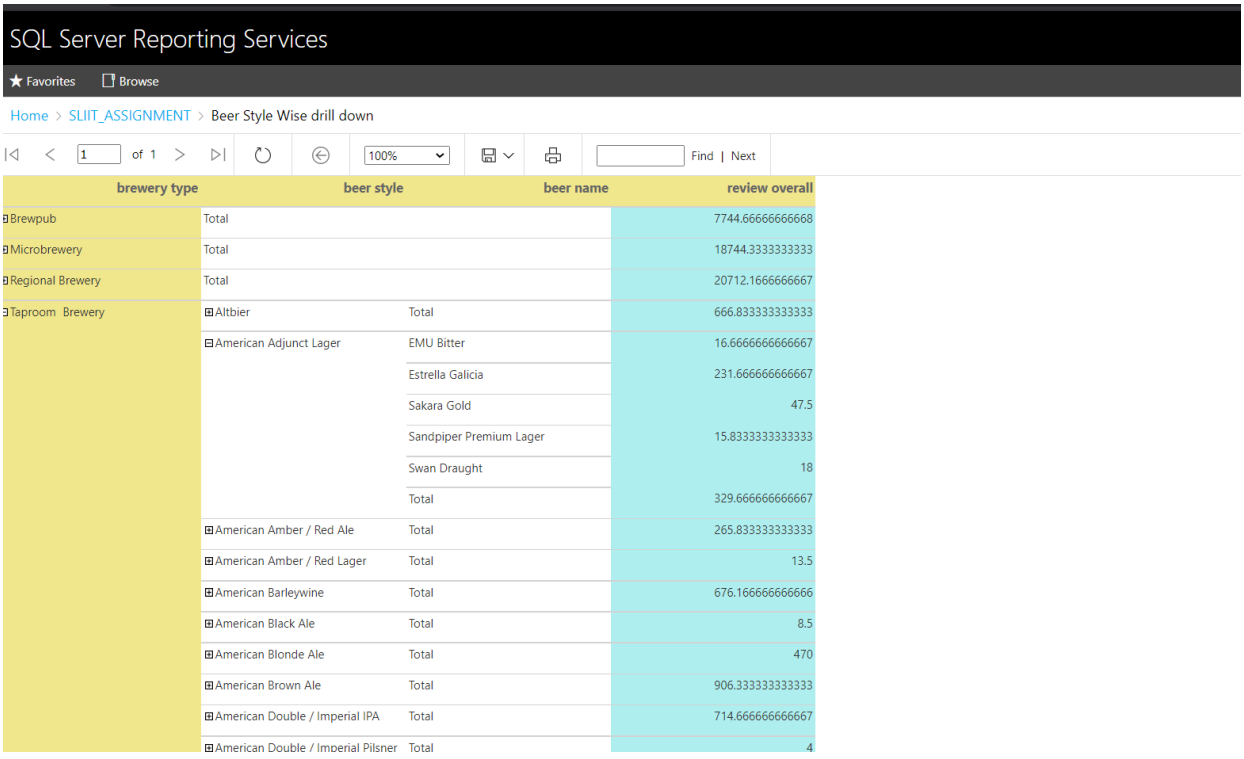


- Here when you select first parameter (Beer Style), Beers are selected which is relevant to that Beer Style. So, the value of the first parameter, will change the list of available values in the second parameter (Beer Name).And multiple beer styles and beer names can be selected.

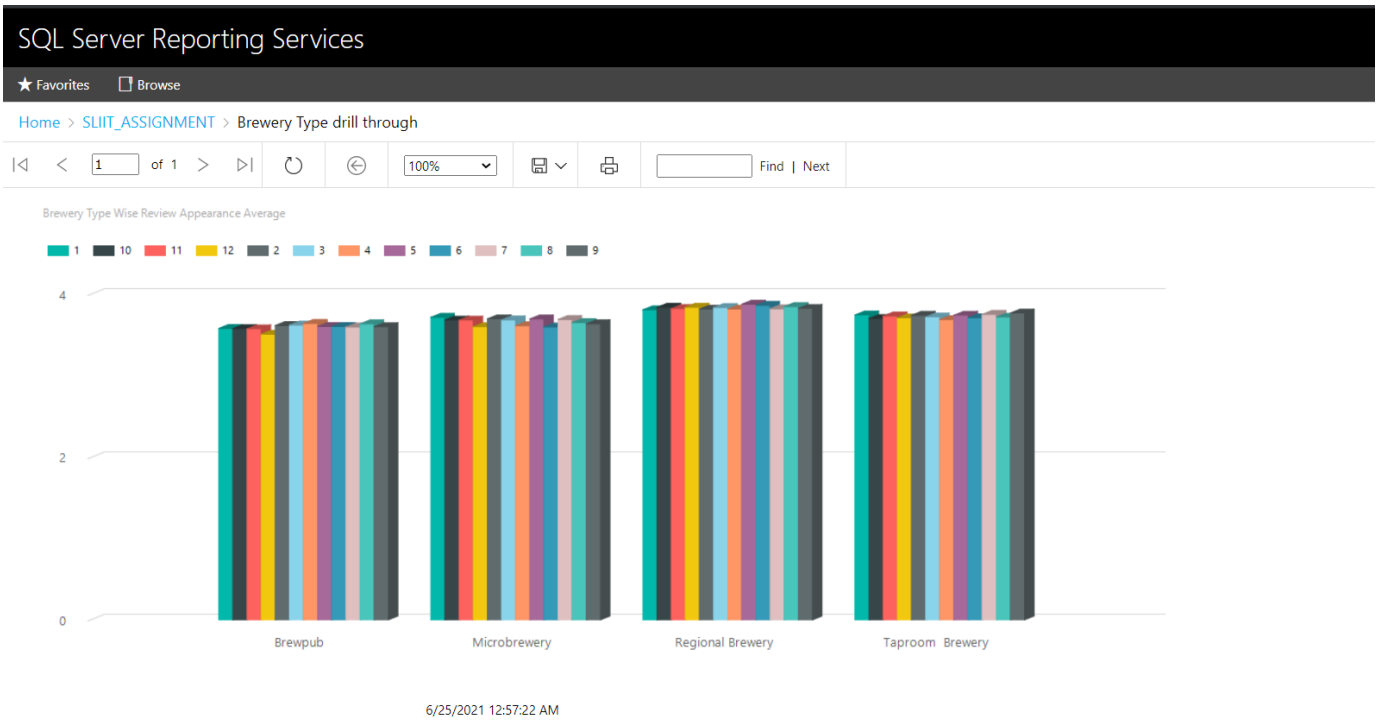
Report 3: SSRS drill-down report



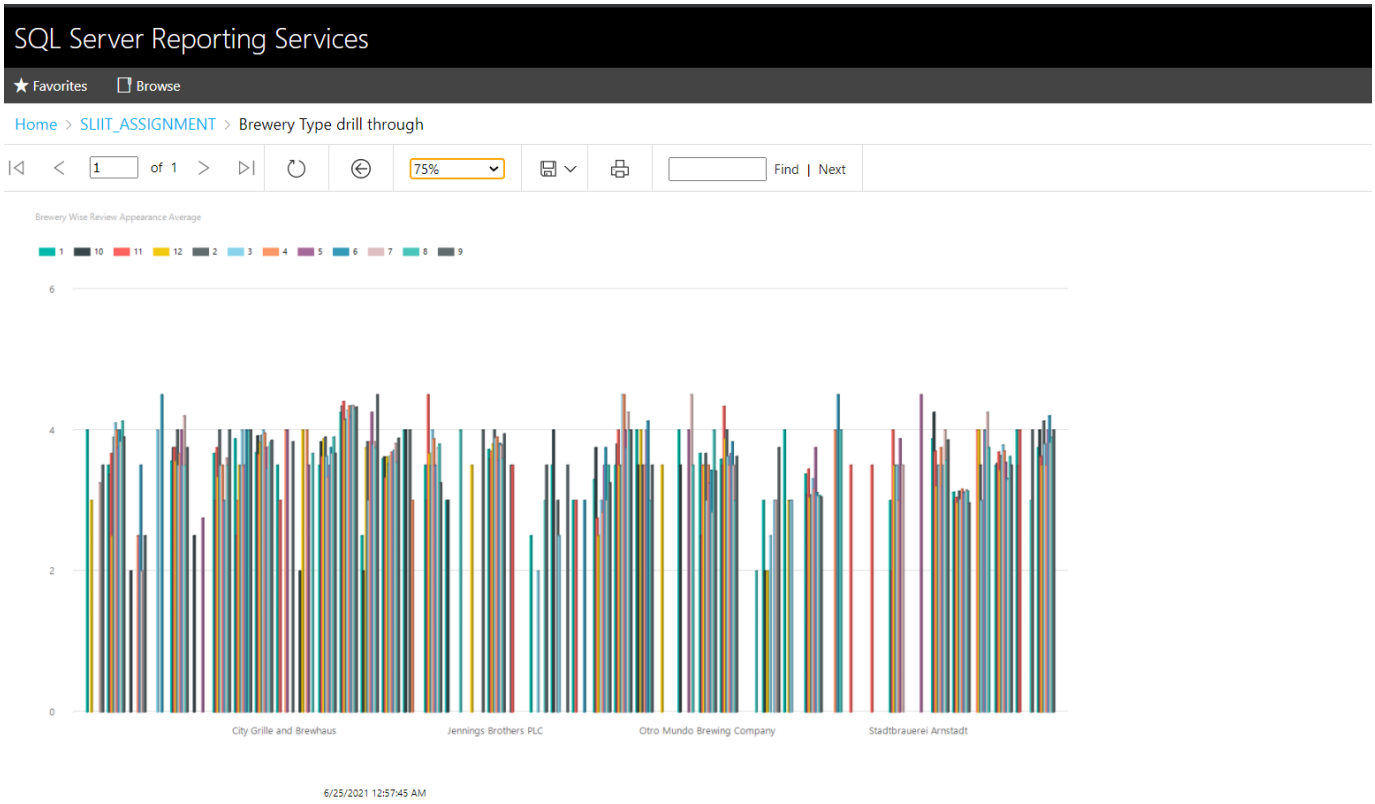
- Above figure you can view the Brewery Type wise Review overall details and the total of the Review overall.
- Also, you can Drill down from the Brewery Type to Brewery and view the Brewery wise Review overall details like in the below figure



Report 4: SSRS drill-through report



- Above Chart is about the Brewery Type wise Appearance average. When you click a Brewery Type name in the chart, you can drill through to the detailed report as shown in below.



- You can go back to the Summary report by clicking the back button.