Sri Lanka Institute of Information Technology

Data Warehousing & Business Intelligence

Assignment 02

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Submitted to:

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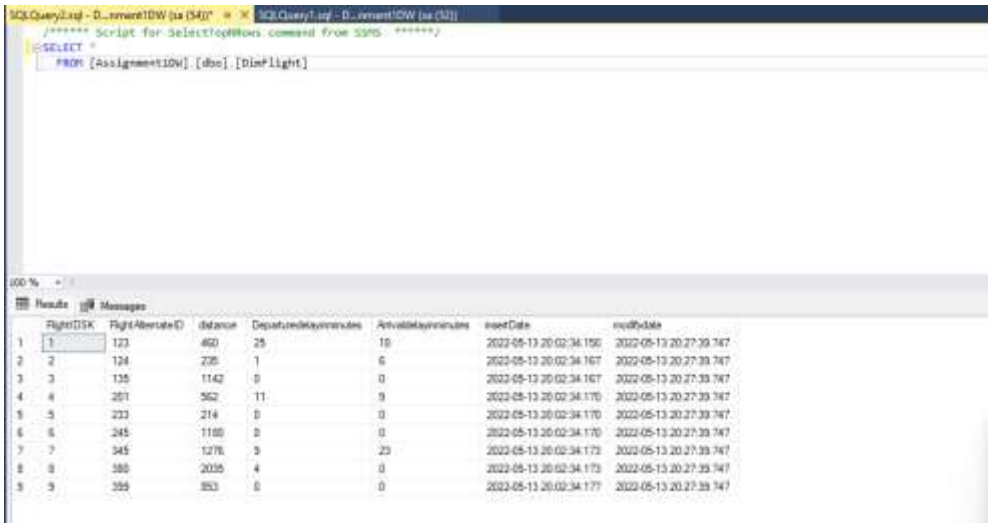
1. Data Source for the Assignment 02.

Data Source – Assignment1DW

Assignment1DW have following tables

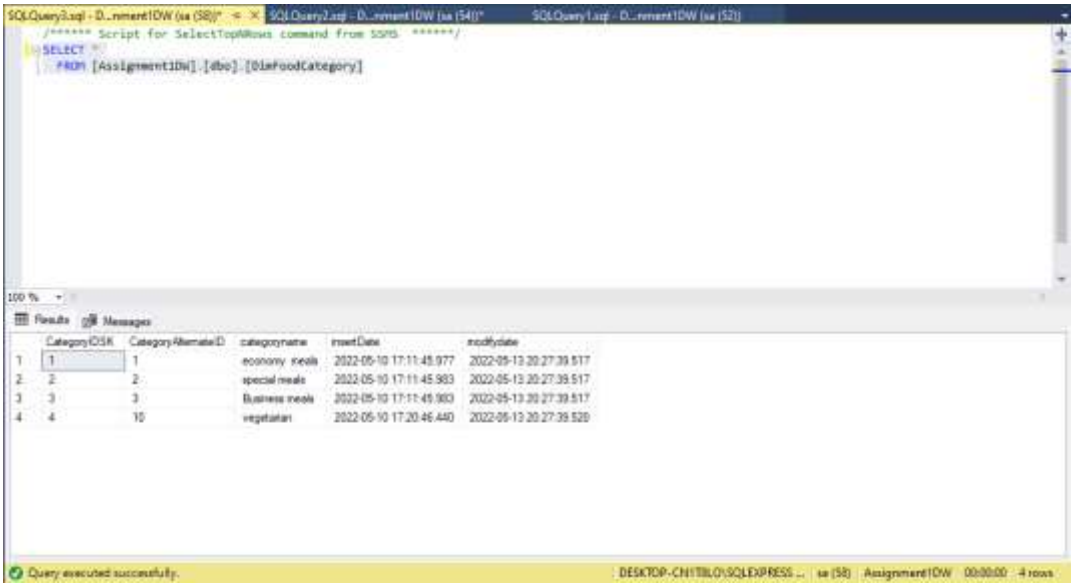
- **DimFlight**
- **DimFoodCategory**
- **DimFoodItem**
- **DimSatisfaction**
- **FactPassengers**

DimFlight



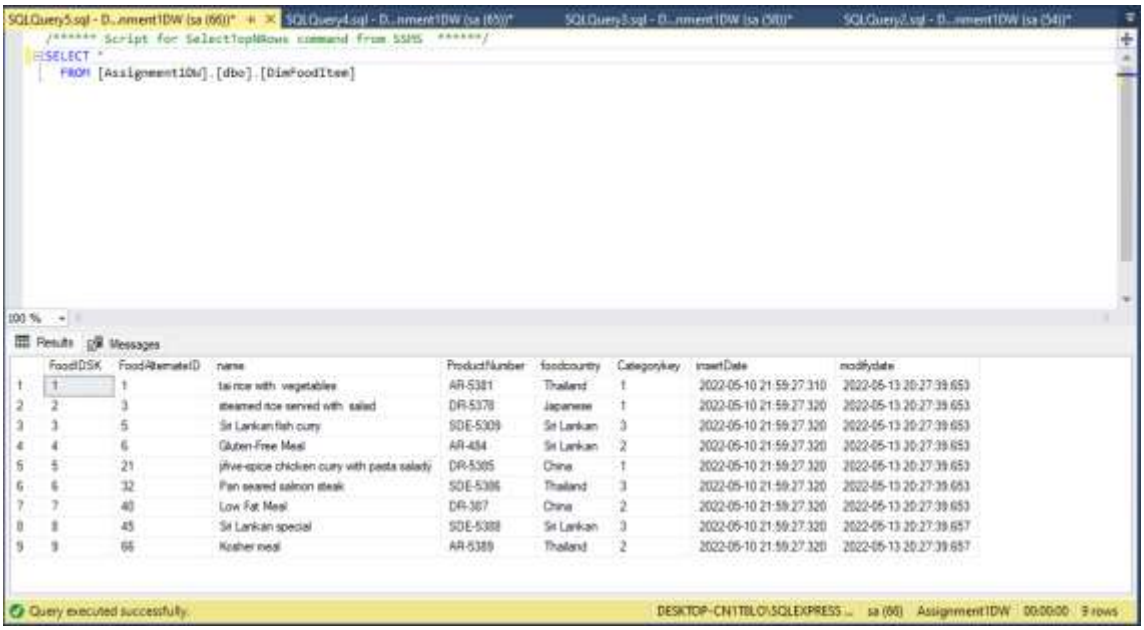
This Table have 9 rows .FlightIDSK, FlightAlternateID, distance, Departuredelayinminutes, Arrivaldelayinminutes ,insertdate,modifydate.

DimFoodCategory



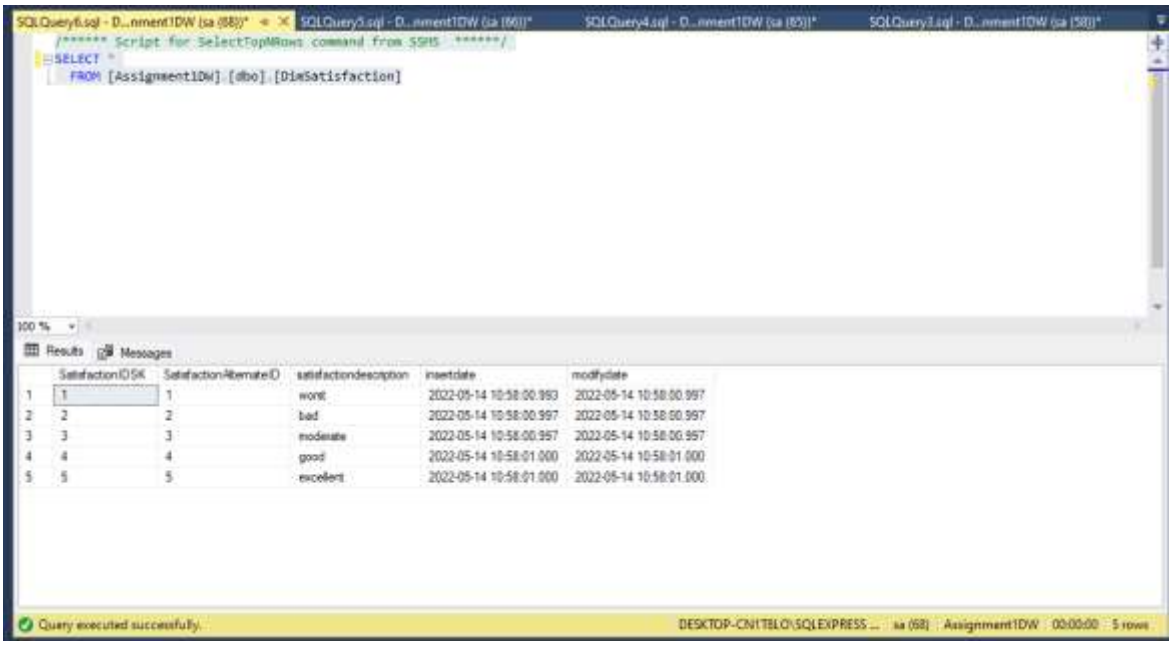
This table have 4 rows.CateoryIDSK, CategoryAlternateID, categoryname, insertdate,modifydate.

DimFoodItem



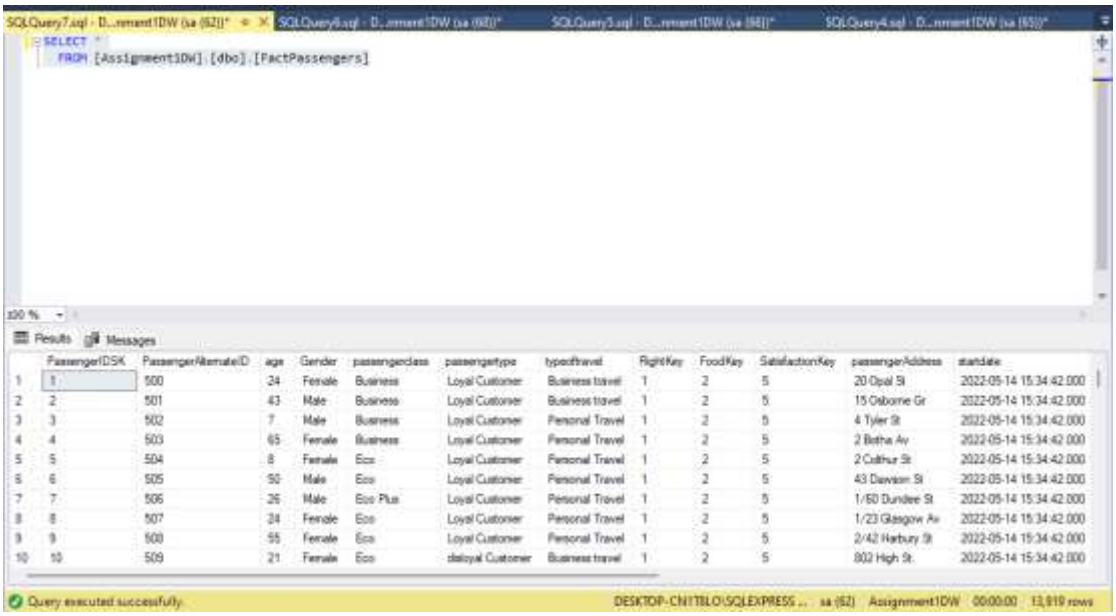
This table have 9 rows. FoodIDSK ,FoodAlternateID, name,ProductNumber,foodcountry,CategoryKey, insertdate,modifydate.

DimSatisfaction



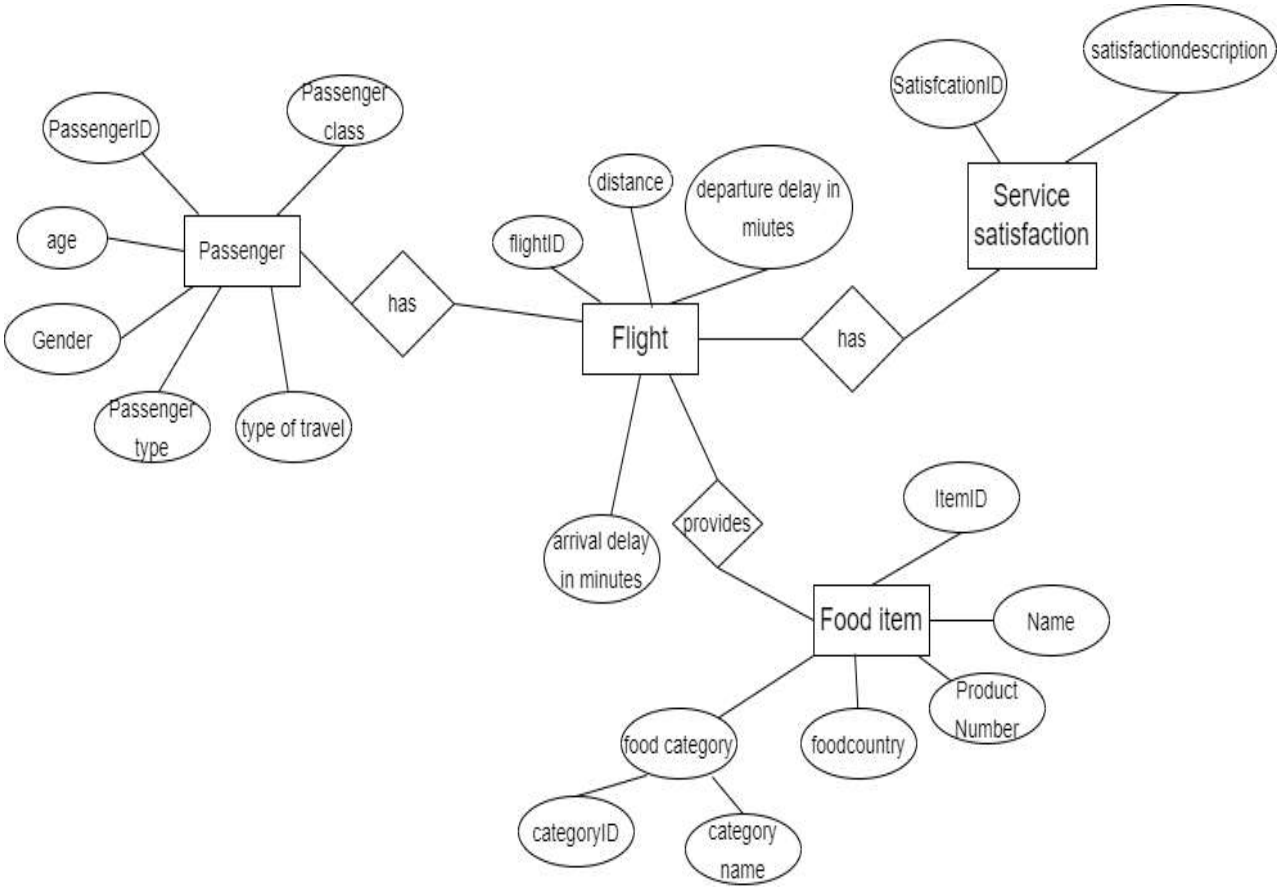
This table have 5 rows. SatisfactionIDSK ,SatisfactionAlternateID, satisfactiondescription, insertdate,modifydate.

FactPassengers



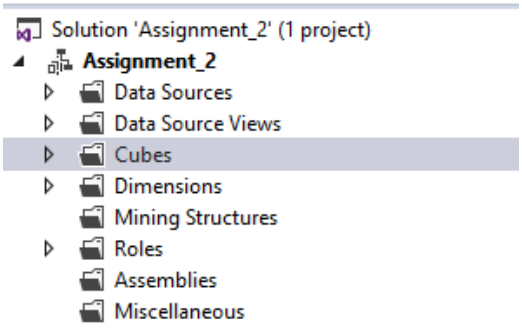
This Table have 13,919 rows .PassengerIDSK, PassengerAlternateID, age, Gender,passengerclass,passengertype,typeoftravel,FlightKey,FoodKey,SatisfactionKey,passengerAddress , startdate,enddate,insertdate,modifydate,accm_txn_create_time, accm_txn_complete_time, txn_process_time_hours.

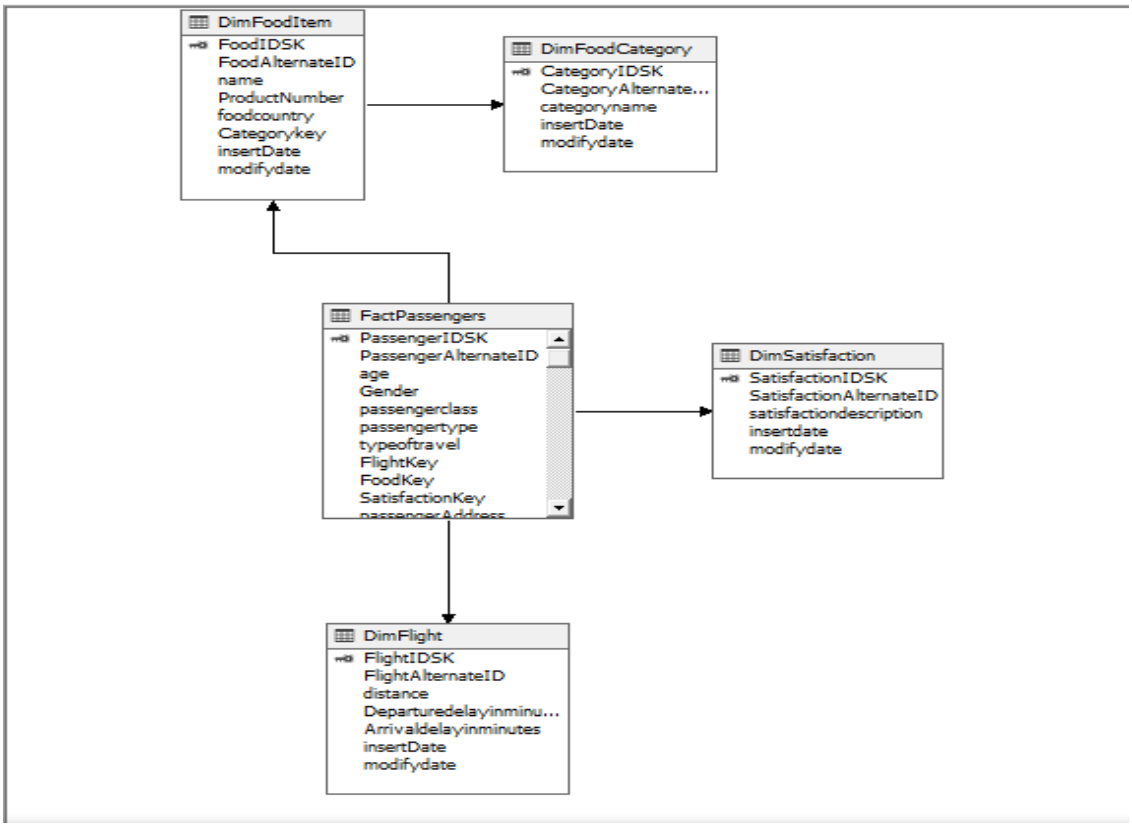
ER Diagram.



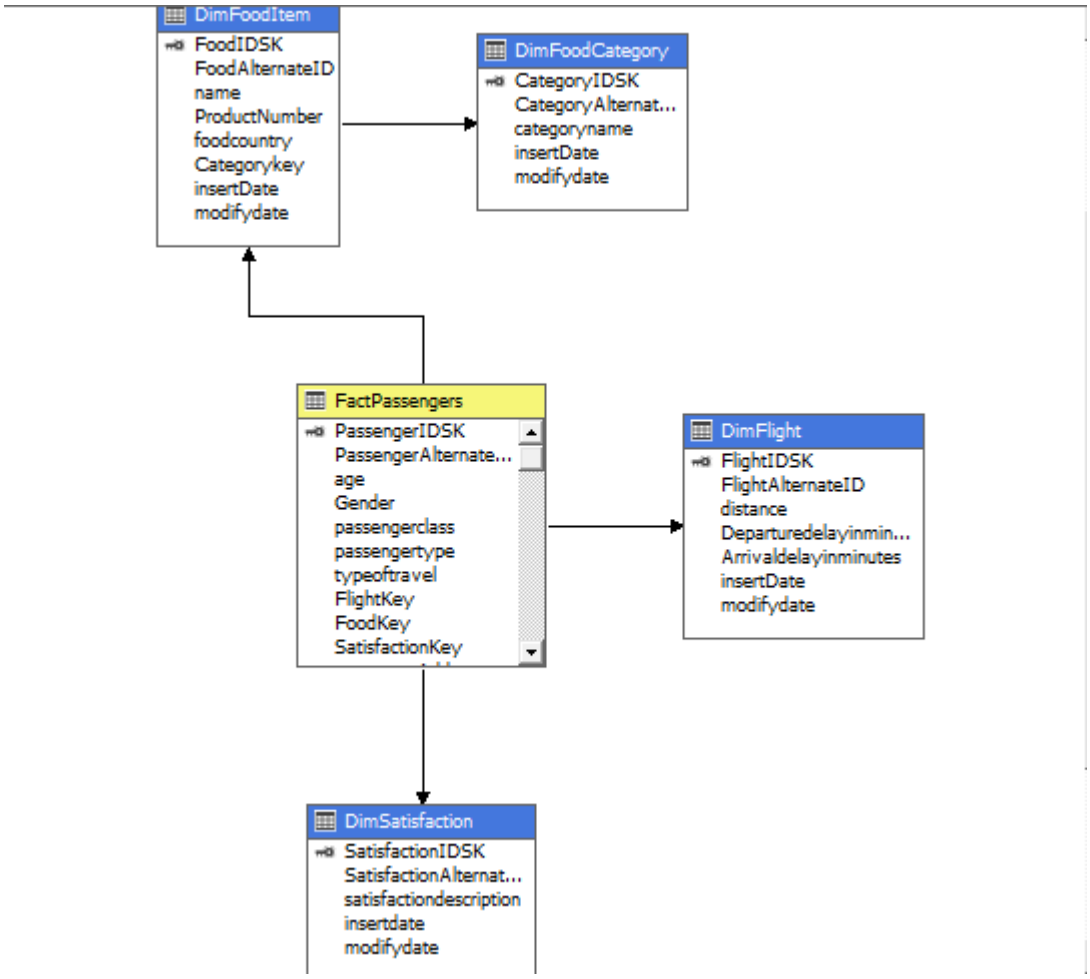
2)SSAS Cube Implementation.

- First, I create Analysis Service Project renamed as “Assignment_2”.
- Then we should configure components starting from data sources to dimensions.
- Then I create my Data Source Which is Assignment1DW.
- Created Date source View.





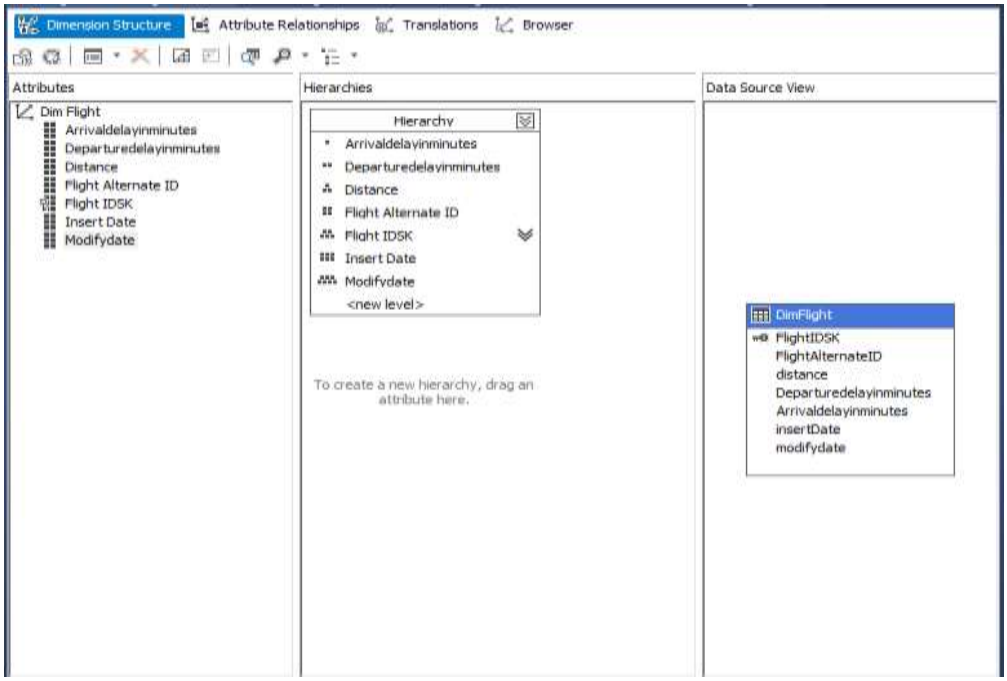
- Then create the cube named Cube_Assignment1DW.This is the snowflake schema.



- Then Add the Dimentions Attributes.

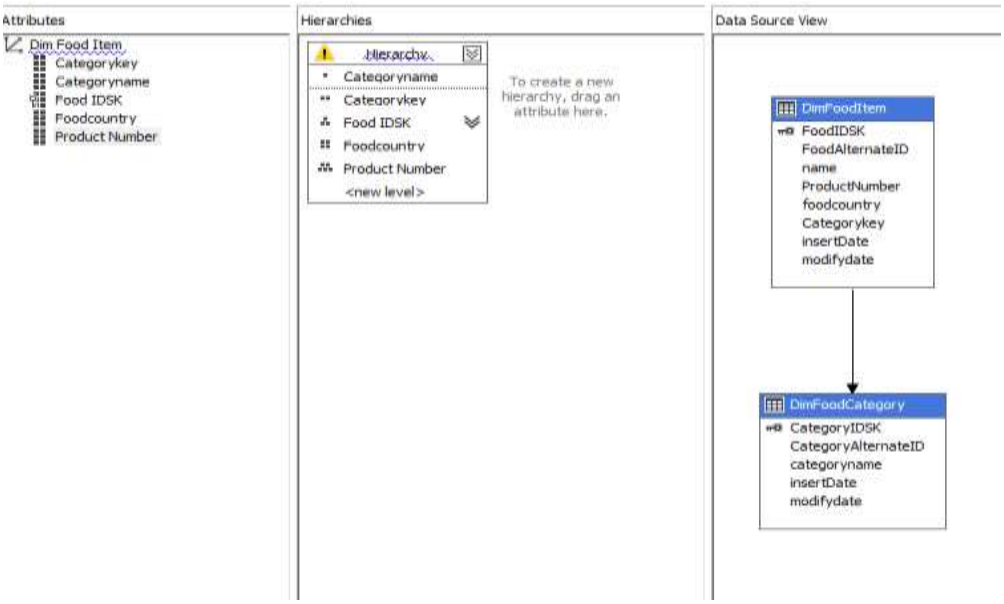
- DimFlight

Create a hierarchy For Flight.



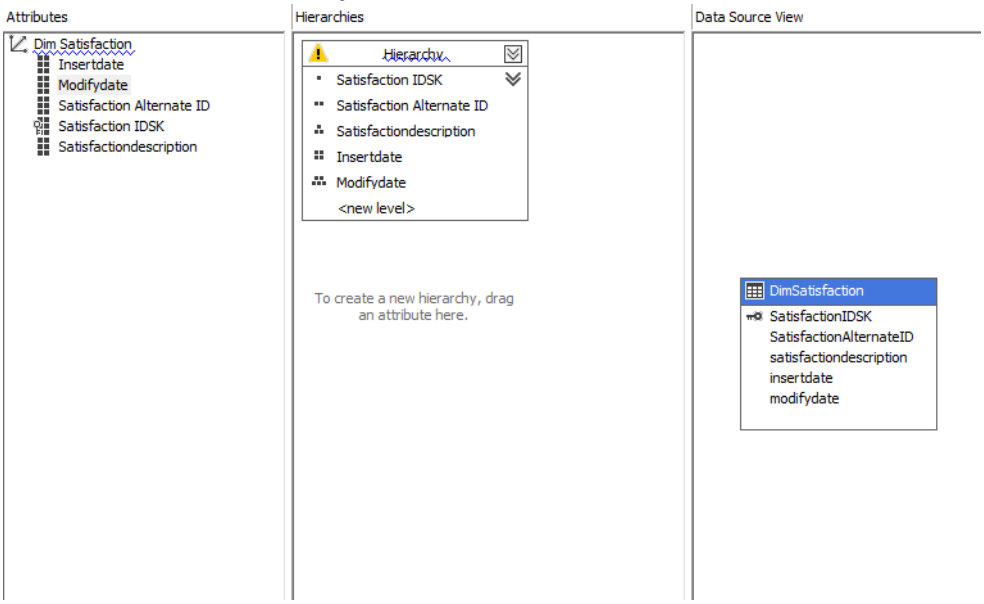
- DimFoodItem

Create a hierarchy For FoodItem.



- DimSatisfaction

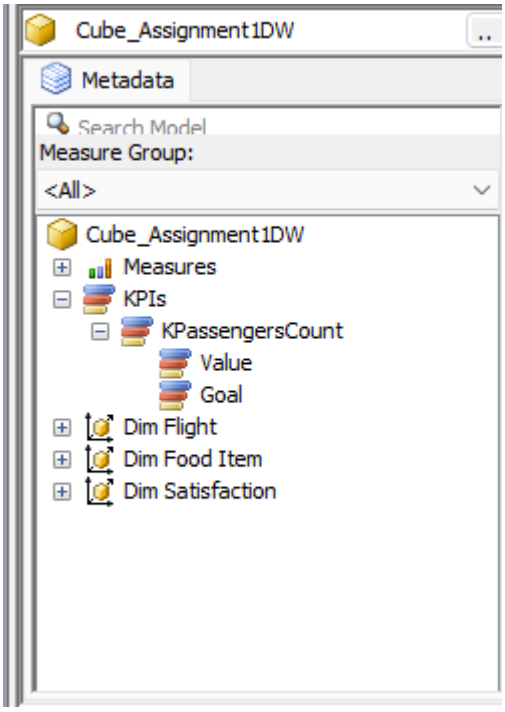
Create a hierarchy For satisfaction.

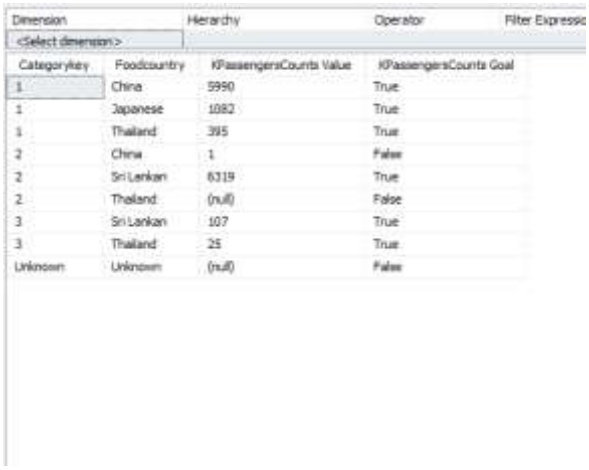


- Create the KPI.Name the KPI as **“KPassengersCounts”** .
- Then select “Fact Passengers” as the Associated Measure Group.In the Measure Group on the lower left side panel,expand Measures and the expand “Fact Passengers”.Drag and drop ‘Fact Passengers Count’ attribute to Global Expression area and modify the expression as flows:

  [Measures].[Fact Passengers Count] >10

- Then I save the all the changes.After processing the cube we can see like this.





Dimension	Hierarchy	Operator	Filter Expressio
<Select dimension>			

Categorykey	Foodcountry	KPassengersCounts Value	KPassengersCounts Goal
1	China	5990	True
1	Japanese	1082	True
1	Thailand	395	True
2	China	1	False
2	Sri Lankan	6319	True
2	Thailand	(null)	False
3	Sri Lankan	107	True
3	Thailand	25	True
Unknown	Unknown	(null)	False

Categorykey	Foodcountry	Satisfactiondescription	KPassengersCounts Value	KPassengersCounts Goal
1	China	bad	(null)	False
1	China	excellent	2672	True
1	China	good	271	True
1	China	moderate	3047	True
1	China	worst	(null)	False
1	China	Unknown	(null)	False
1	Japanese	bad	1	False
1	Japanese	excellent	1081	True
1	Japanese	good	(null)	False
1	Japanese	moderate	(null)	False
1	Japanese	worst	(null)	False
1	Japanese	Unknown	(null)	False
1	Thailand	bad	(null)	False
1	Thailand	excellent	70	True
1	Thailand	good	23	True
1	Thailand	moderate	301	True
1	Thailand	worst	1	False
1	Thailand	Unknown	(null)	False

<Select dimension>

Categorykey	Foodcountry	Satisfactiondescription	Distance	KPassengersCounts Value	KPassengersCounts Goal
1	China	bad	1142	(null)	False
1	China	bad	1180	(null)	False
1	China	bad	1276	(null)	False
1	China	bad	2035	(null)	False
1	China	bad	214	(null)	False
1	China	bad	235	(null)	False
1	China	bad	460	(null)	False
1	China	bad	562	(null)	False
1	China	bad	853	(null)	False
1	China	bad	Unknown	(null)	False
1	China	excellent	1142	(null)	False
1	China	excellent	1180	(null)	False
1	China	excellent	1276	1122	True
1	China	excellent	2035	1550	True
1	China	excellent	214	(null)	False
1	China	excellent	235	(null)	False
1	China	excellent	460	(null)	False
1	China	excellent	562	(null)	False
1	China	excellent	853	(null)	False
1	China	excellent	Unknown	(null)	False
1	China	good	1142	(null)	False

3. Demonstration of OLAP operations.

- First ,I generate the MDX query using the cube's browser.

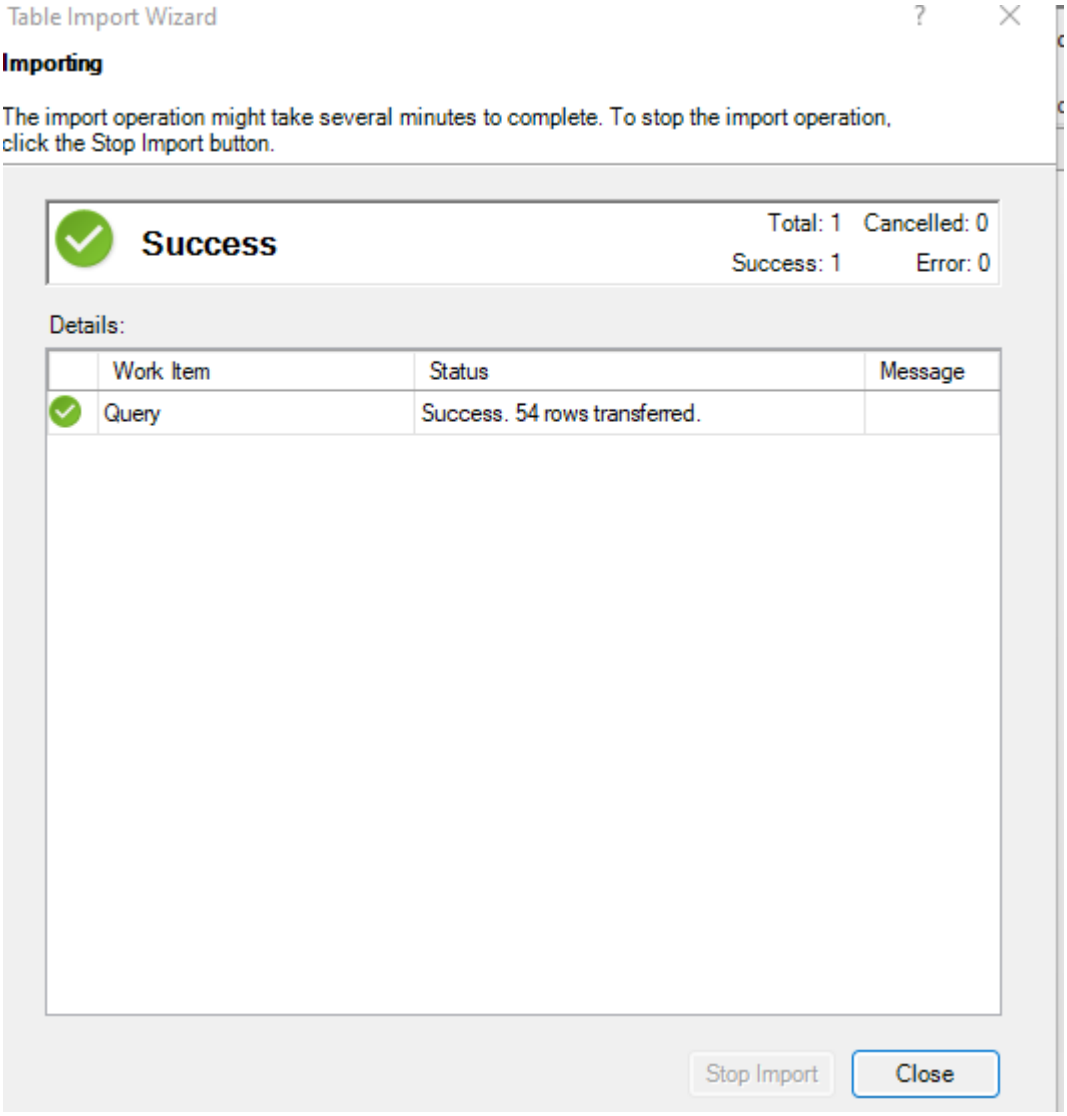
<Select dimension>

Categorykey	Foodcountry	Categoryname	Satisfactiondescription	KPassengersCounts Value	KPassengersCounts Goal
1	China	economy meals	bad	(null)	False
1	China	economy meals	excellent	2672	True
1	China	economy meals	good	271	True
1	China	economy meals	moderate	3047	True
1	China	economy meals	worst	(null)	False
1	China	economy meals	Unknown	(null)	False
1	Japanese	economy meals	bad	1	False
1	Japanese	economy meals	excellent	1081	True
1	Japanese	economy meals	good	(null)	False
1	Japanese	economy meals	moderate	(null)	False
1	Japanese	economy meals	worst	(null)	False
1	Japanese	economy meals	Unknown	(null)	False
1	Thailand	economy meals	bad	(null)	False
1	Thailand	economy meals	excellent	70	True
1	Thailand	economy meals	good	23	True
1	Thailand	economy meals	moderate	301	True
1	Thailand	economy meals	worst	1	False
1	Thailand	economy meals	Unknown	(null)	False
2	China	special meals	bad	(null)	False
2	China	special meals	excellent	1	False
2	China	special meals	good	(null)	False

- Then I click on execute button.In order to get MDX query I click on Design Mode button.

```
SELECT NON EMPTY { KPIValue("KPassengersCounts"), KPIGoal("KPassengersCounts") } ON COLUMNS, NON EMPTY { ([Dim Food Item].[Categorykey].
[Categorykey].ALLMEMBERS * [Dim Food Item].[Foodcountry].[Foodcountry].ALLMEMBERS * [Dim Food Item].[Categoryname].[Categoryname].ALLMEMBERS *
[Dim Satisfaction].[Satisfactiondescription].[Satisfactiondescription].ALLMEMBERS ) } DIMENSION PROPERTIES MEMBER_CAPTION, MEMBER_UNIQUE_NAME ON
ROWS FROM [Cube_Assignment1DW] CELL PROPERTIES VALUE, BACK_COLOR, FORE_COLOR, FORMATTED_VALUE, FORMAT_STRING, FONT_NAME,
FONT_SIZE, FONT_FLAGS
```

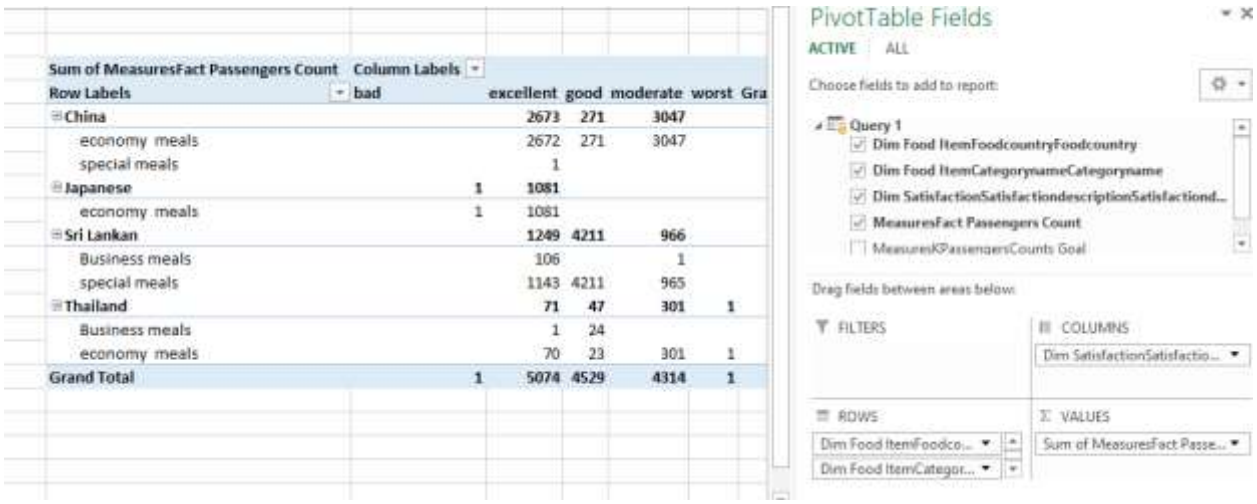
- Then I connect to the Excel using Assignment_2 Using the above MDX Query.
  In the next window,past the MDX query I copied,and click on validate button to ensure there are no erros, and click finish.



In the Excel,I can see all the fields I selected via the MDX Query.

In order to create **Drill Down and Roll Up**.

- I gather the summation of Passenger Count on satisfaction description under Food country and FoodCategory.



Sum of MeasuresFact Passengers Count	Column Labels					
Row Labels	bad	excellent	good	moderate	worst	Gra
China		2673	271	3047		
economy meals		2672	271	3047		
special meals		1				
Japanese	1	1081				
economy meals	1	1081				
Sri Lankan		1249	4211	966		
Business meals		106		1		
special meals		1143	4211	965		
Thailand		71	47	301	1	
Business meals		1	24			
economy meals		70	23	301	1	
Grand Total	1	5074	4529	4314	1	

PivotTable Fields

ACTIVE ALL

Choose fields to add to report:

Query 1
- Dim Food ItemFoodcountryFoodcountry
- Dim Food ItemCategorynameCategoryname
- Dim SatisfactionSatisfactiondescriptionSatisfactiond...
- MeasuresFact Passengers Count
- MeasuresKPassengersCounts Goal

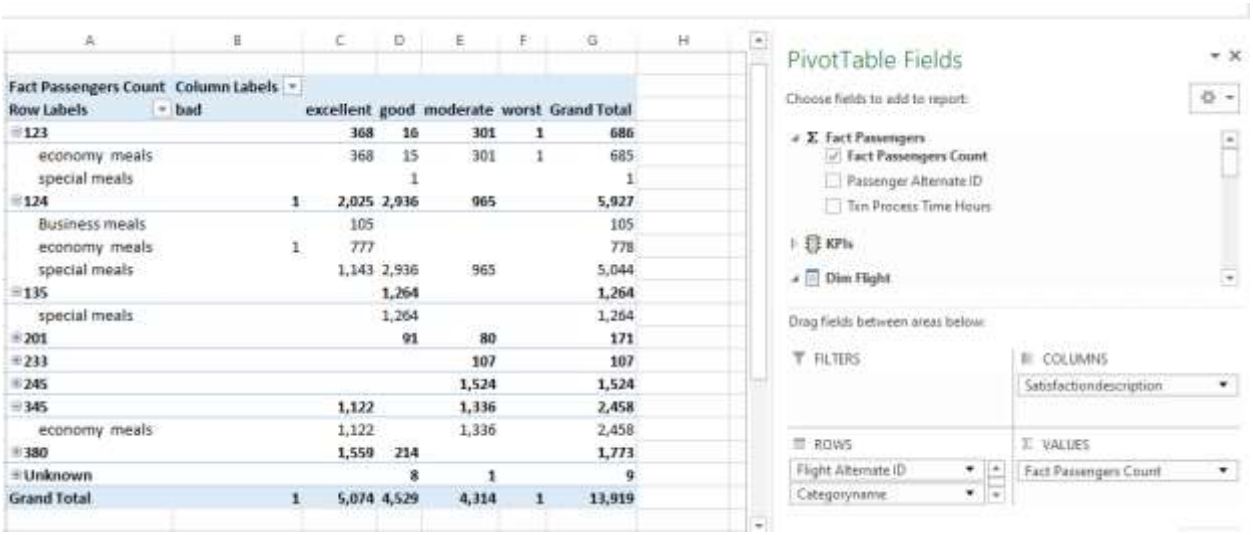
Drag fields between areas below:

FILTERS | COLUMNS: Dim SatisfactionSatisfactio...

ROWS: Dim Food ItemFoodco... / Dim Food ItemCategor...

VALUES: Sum of MeasuresFact Passe...

- I gather the summation of Passenger Count on satisfaction description under FlightID and FoodCategory.



Fact Passengers Count	Column Labels					
Row Labels	bad	excellent	good	moderate	worst	Grand Total
123		368	16	301	1	686
economy meals		368	15	301	1	685
special meals			1			1
124	1	2,025	2,936	965		5,927
Business meals		105				105
economy meals	1	777				778
special meals		1,143	2,936	965		5,044
135			1,264			1,264
special meals			1,264			1,264
201			91	80		171
233				107		107
245				1,524		1,524
345		1,122		1,336		2,458
economy meals		1,122		1,336		2,458
380		1,559	214			1,773
Unknown			8	1		9
Grand Total	1	5,074	4,529	4,314	1	13,919

PivotTable Fields

Choose fields to add to report:

Fact Passengers
- Fact Passengers Count
- Passenger Alternate ID
- Txn Process Time Hours

KPIs

Dim Flight

Drag fields between areas below:

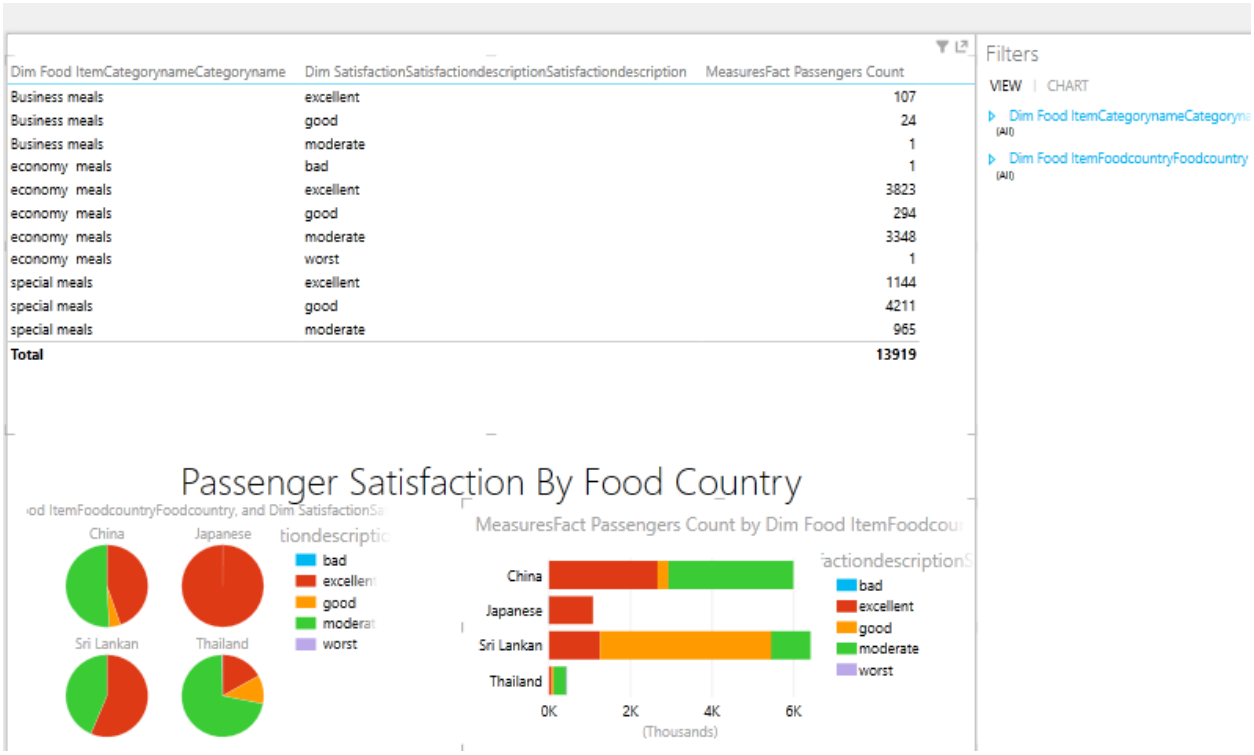
FILTERS | COLUMNS: Satisfactiondescription

ROWS: Flight Alternate ID / Categoryname

VALUES: Fact Passengers Count

- In order to create **Slice and Dice**,

  I create a PowerView dashboard to demonstrate the Passenger Satisfaction food country Wise.Like this,



4.SSRS Reports.

I use Report Builder to create my reports.

- First step to create Data Source.In order to create the data source,I add the my data source as “Assignment1DW”.
- Next I create the data set.In order to create the data set right click on DataSet and open up DataSet properties window.In the query section ,provide the dataset name as “Dataset1” and select use the data set embedded in my dataset.

```
SELECT
  DimFoodItem.foodcountry
  ,FactPassengers.PassengerAlternateID
  ,FactPassengers.passengerclass
  ,DimSatisfaction.satisfactiondescription
FROM
  FactPassengers
  INNER JOIN DimFoodItem
    ON FactPassengers.FoodKey = DimFoodItem.FoodIDSK
  INNER JOIN DimSatisfaction
    ON FactPassengers.SatisfactionKey = DimSatisfaction.SatisfactionIDSK
```

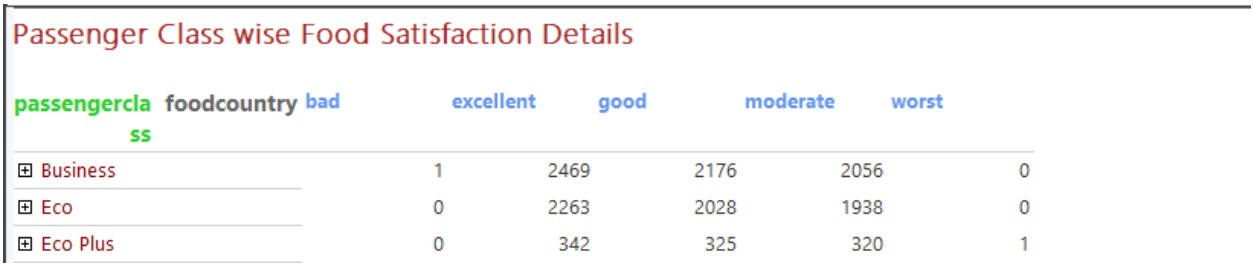
Exceute the above query that I have create using SQL server .Then I click ok button to create the dataset.

1.Create the Materix report.

At the point of selecting fields for Row groups and Column groups, I drag and drop ‘foodcountry’, ‘passengerclass’ to Row groups section and ‘satisfactiondescription’ to Column groups section
and
‘PassengerAlternateID’ to Values section and click Next . In Choose the layout page, select all the option and click Next . These options are to have totals for different levels/groups and to enable or disable the expand/collapse feature (essentially drill-down/roll-up) Click Finish . Now, you should be able to see a matrix inserted in to the report body. I provide a suitable report title such ‘Passenger Class wise Food Satisfaction Details’ and design the look of the report accordingly.

Then I click on save button and save the prepared matrix report to the my report server.

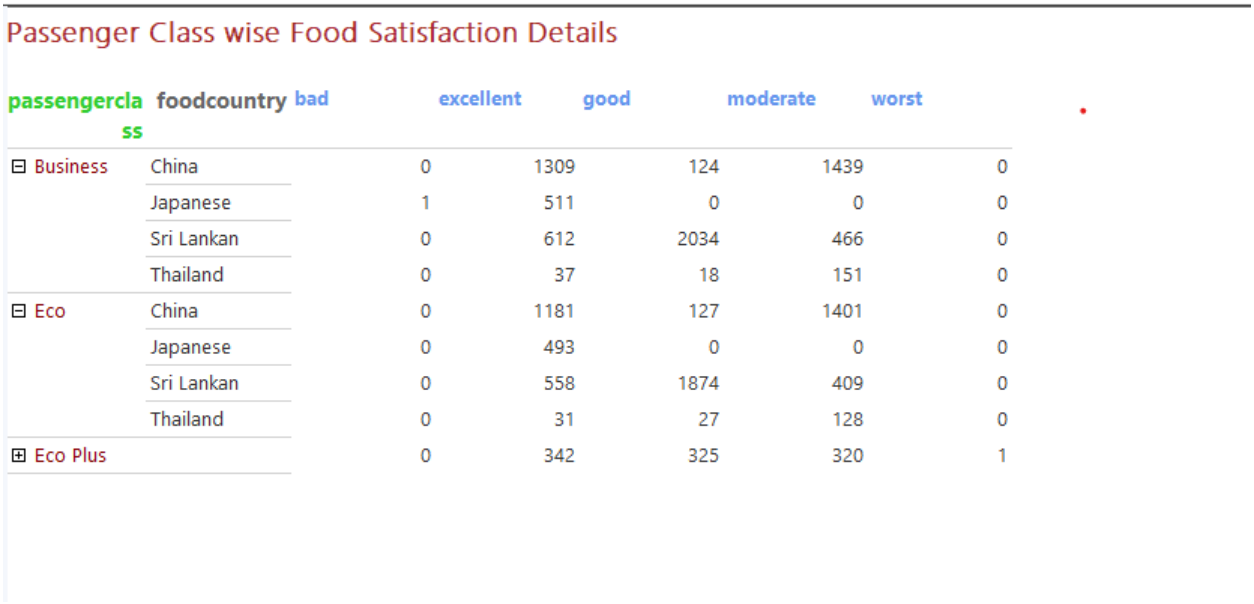
Then it display like this.



Passenger Class wise Food Satisfaction Details

passengerclass	foodcountry	bad	excellent	good	moderate	worst
⊞ Business		1	2469	2176	2056	0
⊞ Eco		0	2263	2028	1938	0
⊞ Eco Plus		0	342	325	320	1

when I click on expand particular Passenger class.I can see like this.



Passenger Class wise Food Satisfaction Details

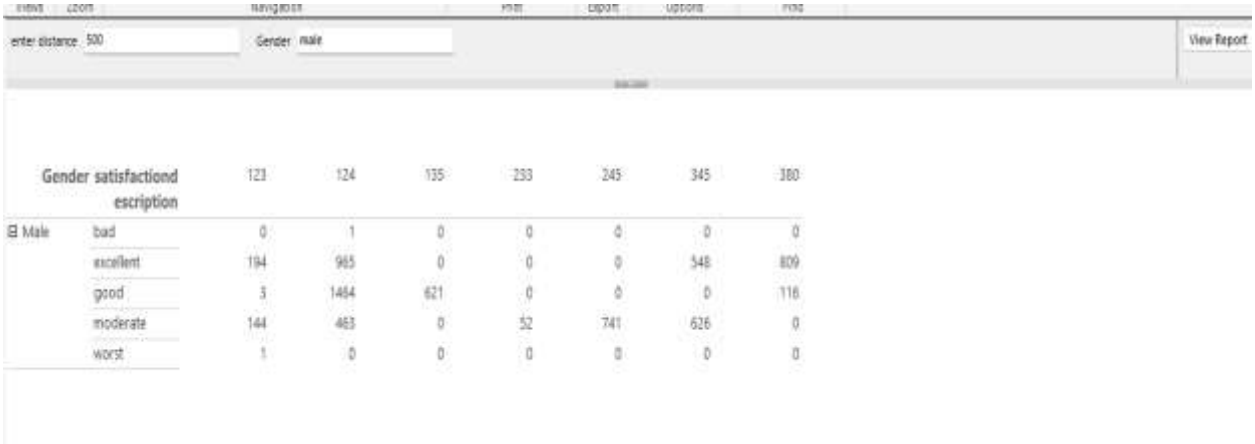
passengerclass	foodcountry	bad	excellent	good	moderate	worst
⊟ Business	China	0	1309	124	1439	0
	Japanese	1	511	0	0	0
	Sri Lankan	0	612	2034	466	0
	Thailand	0	37	18	151	0
⊟ Eco	China	0	1181	127	1401	0
	Japanese	0	493	0	0	0
	Sri Lankan	0	558	1874	409	0
	Thailand	0	31	27	128	0
⊞ Eco Plus		0	342	325	320	1

2.Create the Parameterized Report.

I have added two parameters and List of values to parameters like this.

```
SELECT
 DimFoodItem.foodcountry
 ,FactPassengers.PassengerAlternateID
 ,FactPassengers.passengerclass
 ,DimSatisfaction.satisfactiondescription
FROM
 FactPassengers
 INNER JOIN DimFoodItem
  ON FactPassengers.FoodKey = DimFoodItem.FoodIDSK
 INNER JOIN DimSatisfaction
  ON FactPassengers.SatisfactionKey = DimSatisfaction.SatisfactionIDSK
WHERE
 DimFoodItem.foodcountry = @foodcountry
 AND FactPassengers.passengerclass LIKE @passengerclass
```

Then I save the report to report server.Then I can see the report can get the output like this.



Gender	satisfactiond escription	123	124	135	233	245	345	380
⊟ Male	bad	0	1	0	0	0	0	0
	excellent	194	965	0	0	0	548	809
	good	3	1464	621	0	0	0	116
	moderate	144	463	0	52	741	626	0
	worst	1	0	0	0	0	0	0