Power BI Advanced

Enhance your Data Model

Version: August 2019

Module 1 Lab

1. Open up the file **Student Modeling Pre-class.pbix**

2. Create the relationships between the tables!
   HINT: You may need to preview some of the tables to see what is in them

   Think about: What sort of data model are you creating?

Student Notes

Step by Step

1. Navigate to **Model** view
2. Drag a **relationship** line between **CampaignID** field from **CampaignDim** table and **CampaignID** field from **Sales** table
3. Similarly, create relationship between
   - **CustomerID** fields in **CustomerDim** and **Sales** table
   - **ProductID** fields in **ProductDim** and **Sales** table
   - **Date** fields in **DateDim** and **Sales** table
4. Drag a **relationship** line between **Zip** field from **GeoDim** table and **ZipCode** from **CustomerDim** table

KNOWLEDGE CHECK ANSWERS Module 1

- What is a *data model* in the context of Power BI?
  - *A data model is a collection of tables and relationships*

- What are some advantages of a star schema over a flat or denormalized model?
  - *Dimension tables save space by reducing the amount of data that needs to be repeated over and over in every row*
  - *Relationships between tables can be leveraged for more complex measures*

- How might you improve the performance of a Power BI model?
  - *Try using a star schema instead of a flat or denormalized model*
  - *Remove unnecessary columns*
  - *Set appropriate data types*

- How does Power BI store DateTime information? What are some consequences of this?
  - *DateTime information is stored as a floating-point decimal number. This means that datetimes are very precise but not very efficient to store.*

KNOWLEDGE CHECK ANSWERS Module 2

- Which of these help with compression of data and performance?
  - Using integers instead of strings
  - Using high cardinality columns
  - Move calculations to data source
  - Remove unused tables and columns

- *All of the listed options help with compression of data and performance.*

Module 3 Lab

1. Create a MEASURE for Total Units Sold
   HINT: The formula will probably use SUM()

2. Create a CALCULATED COLUMN on the fact table that shows product category and campaign traffic channel combined
   Example: Urban, Organic Search

3. It is fairly easy to see that the CALCULATED COLUMN is working. Create some visuals that allow you to confirm that the Total Units Sold MEASURE is working right

Student Notes

Step by Step

1.
   a) Select **Sales** Table. From the ribbon select **Modeling -> New Measure**.
   b) In the formula bar enter:
      Total Units Sold = SUM(Sales[Units])
   c) From the ribbon select **Format -> Currency -> $ English(United States)** to format the measure

2.
   a) Select **Sales** table. From the ribbon select **Modeling -> New Column**.
   b) In the formula bar enter:
      Category, Campaign = RELATED(ProductDim[Category]) & ", " & RELATED(CampaignDim[TrafficChannel])

3.
   a) Drag newly created **Total Units Sold** measure to the canvas. A clustered column chart is created
   b) Drag **Units** field from **Sales** table to this visual
   c) Select **Device** field from **CampaignDim** table

KNOWLEDGE CHECK ANSWERS Module 3

- When is Calculated Column Evaluated?
  - *At the time of data load/data refresh.*

- What is Default Summarization?
  - *A default summarization is an implicit measure created in the background when you put a numeric field on a visualization. The function used (sum/max/min/avg/…) is based on the numeric field's default summarization setting.*

- When is a Measure Evaluated?
  - *At render time.*

- When to use Measures and Calculated Columns?
  - *It depends ☺. Calculated columns are useful when each row of data should be independently considered (although measures can do this too!) and the result won't change until the next data refresh. Measures should be used everywhere else.*

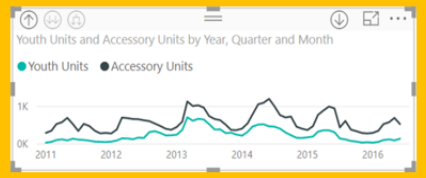
Module 5 Lab

Create a report for the VP in charge of the Youth and Accessory Segments

1. Include a table visualization showing total units sold in the Youth Segment, Accessory Segment, and all other segments; by Campaign Device

Device	Total Units	Youth Units	Accessory Units	Rest of Company Units
Deskop	10806	222	653	9931
Desktop	218680	4933	12412	201335
Mobile	198014	4427	11420	182167
Paper	40524	908	2376	37240
Tablet	207344	5151	12308	189885
Total	**675368**	**15641**	**39169**	**620558**

2. Include a line chart showing total units sold in Youth and Accessory Segments by month



3. BONUS: Use the Unit Cost and Unit Price from the ProductDim table to calculate Sales Amount, Cost of Goods Sold, Profit and build some visuals around them

Student Notes

Step by Step

1.

a) Select **Sales** Table. From the ribbon select **Modeling -> New Measure**.

b) Create 3 measures:

Youth Units Sold = CALCULATE([Total Units Sold],FILTER(ProductDim,ProductDim[Segment]="Youth"))

Accessory Units Sold = CALCULATE([Total Units Sold],FILTER(ProductDim,ProductDim[Segment]="Accessory"))

Rest of Company Units Sold = CALCULATE([Total Units Sold],FILTER(ALL(ProductDim),AND(ProductDim[Segment]<>"Accessory",ProductDim[Segment]<>"Youth")))

a) From the ribbon select **Format -> Whole Number and Comma** to format the measure

b) Add a table visual and drag **CampaignDim -> Device** and the **3 newly created measures**

2.

a) Select Line Chart visual.

b) Select Date hierarchy from Date table

c) Select Youth Units Sold and Accessory Units sold measures.

3.

a) Create following measures and use a visual to analyze data.

*Sales Amount = SUMX(Sales, Sales[Units] * RELATED(ProductDim[Unit Price]))*
*COGS = SUMX(Sales, Sales[Units] * RELATED(ProductDim[Unit Cost]))*
*Profit = SUMX(Sales, Sales[Units] * (RELATED(ProductDim[Unit Price]) - RELATED(ProductDim[Unit Cost])))*

KNOWLEDGE CHECK ANSWERS Module 5

Power BI

- What are the different kinds of evaluation contexts?
  - *Filter context and row context*

- When are filter or a row contexts present?
  - *Row contexts are present in iterator functions and calculated column evaluations. Filter contexts are present in pivot tables and other visualizations.*

- Which functions are commonly used to *modify* existing evaluation contexts?
  - *CALCULATE, ALL, etc.*

KNOWLEDGE CHECK ANSWERS Module 6

- Can I parse advanced DAX formulas?
  - *Yes I can!*

- What are some standard DAX patterns?
  - *CALCULATE(…)*

- Which time intelligence functions are built-in to DAX?
  - *Lots of them…YTD, FY, previous month, etc.*

KNOWLEDGE CHECK ANSWERS Module 7

- Which of these are best practice ?
  - isBlank() or comparison operation =Blank()
    - *Using isBlank()*
  - SELECTEDVALUE() or HASONEVALUE()
    - *Using SELECTEDVALUE()*
  - DIVIDE() or IFERROR()
    - *Using DIVIDE()*
  - Using variables or repeating calculations
    - *Using variables*