

Power BI Assignment 1 – Data Transformation & Data Modeling

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Topic Name: E-Commerce Sales Analysis

Import Data:

List of Orders Table imported to Power Bi through Ribbon→Home Tab→Data Group→Get Data→Excel Work Book and transformed to power query editor using Transform Data in Power BI and other two tables are imported from power query editor through Ribbon →Home tab→New Query Group→ New Source→Excel Workbook.

Data Transformation:

Restrict the "List of Orders" table to only the first 500 rows:

The screenshot displays the Power BI Data View for the 'List of Orders' table. The table contains 500 rows of data, with columns for Order ID, Order Date, CustomerName, State, and City. The 'APPLIED STEPS' pane on the right shows the transformation steps: Source, Promoted Headers, Changed Type, and 'Kept first 500 First Rows'. The status bar at the bottom indicates '5 COLUMNS, 500 ROWS' and 'Column profiling based on top 1000 rows'.

	Order ID	Order Date	CustomerName	State	City
481	B-26081	22-03-2019	Aarushi	Tamil Nadu	Chennai
482	B-26082	23-03-2019	Jitesh	Uttar Pradesh	Lucknow
483	B-26083	24-03-2019	Yogesh	Bihar	Patna
484	B-26084	25-03-2019	Anita	Kerala	Thiruvananthapuram
485	B-26085	26-03-2019	Shrichand	Punjab	Chandigarh
486	B-26086	26-03-2019	Mukesh	Haryana	Chandigarh
487	B-26087	26-03-2019	Vandana	Himachal Pradesh	Simla
488	B-26088	26-03-2019	Bhavna	Sikkim	Gangtok
489	B-26089	26-03-2019	Kanak	Goa	Goa
490	B-26090	27-03-2019	Sagar	Nagaland	Kohima
491	B-26091	27-03-2019	Manju	Andhra Pradesh	Hyderabad
492	B-26092	27-03-2019	Ramesh	Gujarat	Ahmedabad
493	B-26093	27-03-2019	Sarita	Maharashtra	Pune
494	B-26094	27-03-2019	Deepak	Madhya Pradesh	Bhopal
495	B-26095	28-03-2019	Monisha	Rajasthan	Jaipur
496	B-26096	28-03-2019	Atharv	West Bengal	Kolkata
497	B-26097	28-03-2019	Vini	Karnataka	Bangalore
498	B-26098	29-03-2019	Pinky	Jammu and Kashmir	Kashmir
499	B-26099	30-03-2019	Bhishm	Maharashtra	Mumbai
500	B-26100	31-03-2019	Hitika	Madhya Pradesh	Indore

Restricted the first 500 rows in “List of Orders” table using keep rows menu. Ribbon→Home Tab→Reduce rows→Keep rows→Keep Top Rows→Number of Rows “500”.

Ensure the “Order Date” column in the “List of Orders” table is set to data type 'Date':

The screenshot shows the Power BI Desktop interface. The ribbon includes 'Query', 'Manage Columns', 'Reduce Rows', 'Sort', 'Transform', 'Combine', and 'AI Insights'. The 'Transform' tab is active, showing options like 'Data Type: Date', 'Use First Row as Headers', and 'Replace Values'. The 'Query Settings' pane on the right shows the 'List of Orders' query with the 'Order Date' column type changed to 'Date'.

Order Date	CustomerName	State	City
01-04-2018	Bharat	Gujarat	Ahmedabad
01-04-2018	Pearl	Maharashtra	Pune
03-04-2018	Jahan	Madhya Pradesh	Bhopal
03-04-2018	Divsha	Rajasthan	Jaipur
05-04-2018	Kasheen	West Bengal	Kolkata
06-04-2018	Hazel	Karnataka	Bangalore
06-04-2018	Sonakshi	Jammu and Kashmir	Kashmir
08-04-2018	Aarushi	Tamil Nadu	Chennai
09-04-2018	Jitesh	Uttar Pradesh	Lucknow
09-04-2018	Yogesh	Bihar	Patna
11-04-2018	Anita	Kerala	Thiruvananthapuram
12-04-2018	Shrichand	Punjab	Chandigarh
12-04-2018	Mukesh	Haryana	Chandigarh
13-04-2018	Vandana	Himachal Pradesh	Simla
15-04-2018	Bhavna	Sikkim	Gangtok
15-04-2018	Kanak	Goa	Goa
17-04-2018	Sagar	Nagaland	Kohima
18-04-2018	Manju	Andhra Pradesh	Hyderabad
18-04-2018	Ramesh	Gujarat	Ahmedabad
20-04-2018	Sarita	Maharashtra	Pune

Order date data type changed as “Date”.

Change the data type of “Amount” and “Target” columns to ‘Fixed Decimal Number’:

The screenshot shows the Power BI Desktop interface. The ribbon includes 'Query', 'Manage Columns', 'Reduce Rows', 'Sort', 'Transform', 'Combine', and 'AI Insights'. The 'Transform' tab is active, showing options like 'Data Type: Fixed decimal number', 'Use First Row as Headers', and 'Replace Values'. The 'Query Settings' pane on the right shows the 'Order Details' query with the 'Amount' column type changed to 'Fixed decimal number'.

Amount	Profit	Quantity	Category
1,275.00	-1148	7	Furniture
66.00	-12	5	Clothing
8.00	-2	3	Clothing
80.00	-56	4	Electronics
168.00	-111	2	Electronics
424.00	-272	5	Electronics
2,617.00	1151	4	Electronics
561.00	212	3	Clothing
119.00	-5	8	Clothing
1,355.00	-60	5	Clothing
24.00	-30	1	Furniture
193.00	-166	3	Clothing
180.00	5	3	Clothing
116.00	16	4	Clothing
107.00	36	6	Clothing
12.00	1	2	Clothing
38.00	18	1	Clothing
65.00	17	2	Clothing
157.00	5	2	Clothing

Column “Amount” Data type changed as “Fixed Decimal Number” in Order Details table

Column "Target" Data type changed as "Fixed Decimal Number" in Sales Target table

Format the "Customer Name" column into proper case, ensuring consistent capitalization for each word:

Customer Name column capitalized each word through Ribbon → Transform tab → Text Column group → Format menu → Capitalize each word option.

CustomerName	State	City
Bharat	Gujarat	Ahmedabad
Pearl	Maharashtra	Pune
Jahan	Madhya Pradesh	Bhopal
Divsha	Rajasthan	Jaipur
Kasheen	West Bengal	Kolkata
Hazel	Karnataka	Bangalore
Sonakshi	Jammu and Kashmir	Kashmir
Aarushi	Tamil Nadu	Chennai
Jitesh	Uttar Pradesh	Lucknow
Yogesh	Bihar	Patna
Anita	Kerala	Thiruvananthapuram
Shrichand	Punjab	Chandigarh
Mukesh	Haryana	Chandigarh
Vandana	Himachal Pradesh	Simla
Bhavna	Sikkim	Gangtok
Kanak	Goa	Goa
Sagar	Nagaland	Kohima
Manju	Andhra Pradesh	Hyderabad
Ramesh	Gujarat	Ahmedabad
Sarita	Maharashtra	Pune

Merge the "State" and "City" columns to create a new column named "Location" in the format 'City, State':

ABc Location	PROPERTIES
Ahmedabad,Gujarat	Name
Pune,Maharashtra	List of Orders
Bhopal,Madhya Pradesh	All Properties
Jaipur,Rajasthan	APPLIED STEPS
Kolkata,West Bengal	Source
Bangalore,Karnataka	Promoted Headers
Kashmir,Jammu and Kashmir	Changed Type
Chennai,Tamil Nadu	Kept first 500 First Rows
Lucknow,Uttar Pradesh	Order Date type changed
Patna,Bihar	Filtered Rows
Thiruvananthapuram,Kerala	Cus Name Capitalized Each W...
Chandigarh,Punjab	Cus Name Trimmed Text
Chandigarh,Haryana	Cus Name Cleaned Text
Simla,Himachal Pradesh	Merged city, state Columns
Gangtok,Sikkim	
Goa,Goa	
Kohima,Nagaland	
Hyderabad,Andhra Pradesh	
Ahmedabad,Gujarat	
Pune,Maharashtra	
Bhopal,Madhya Pradesh	

State and city column merged in one column named Location in the format City, State using Merge Columns in Transform Tab.

Create a new custom column named "Profit Margin" as the percentage of "Profit" divided by "Amount":

1.2 Profit Margin	PROPERTIES
-90.039	Name
-18.182	Order Details
-25	All Properties
-70	APPLIED STEPS
-66.071	Source
-64.151	Promoted Headers
43.982	Amount Data Type changed
37.79	Profit margin column created
-4.202	Changed Type
-4.428	Rounded Off
-125	
-86.01	
2.778	
13.793	
33.645	
8.333	
47.368	
26.154	
3.185	
0	

Profit Margin Customer column created as the percentage of profit divided by amount through Ribbon→Add column tab→General Group→Custom Column menu using formula $=(\text{[Profit]} / \text{[Amount]}) * 100$

Add a new conditional column named "Profit Status" based on the values in the "Profit" column:

PROPERTIES
Name: Profit Status

APPLIED STEPS
Source
Promoted Headers
Amount Data Type changed
Profit margin column created
Changed Type
Rounded Off
X Profit Status column created

New column name: Profit Status

Column Name	Operator	Value	Output
Profit	is less than	0	Loss
Profit	equals	0	Break-Even

“Profit status” Conditional Column created as per the condition through Ribbon→Add column tab→General Group→Conditional Column

Merging Data (Joins):

Queries [4]

- List of Orders
- Order Details
- Sales target
- Orders Data

Query Settings

Table.SelectRows("Expanded Order Details", each true)

Order ID	Order Date	CustomerName	Location	Order Details Order ID
1	01-04-2018	Bharat	Ahmedabad,Gujarat	B-25601
2	01-04-2018	Bharat	Ahmedabad,Gujarat	B-25601
3	01-04-2018	Bharat	Ahmedabad,Gujarat	B-25601
4	01-04-2018	Bharat	Ahmedabad,Gujarat	B-25601
5	01-04-2018	Pearl	Pune,Maharashtra	B-25602
6	01-04-2018	Pearl	Pune,Maharashtra	B-25602
7	01-04-2018	Pearl	Pune,Maharashtra	B-25602
8	01-04-2018	Pearl	Pune,Maharashtra	B-25602
9	01-04-2018	Pearl	Pune,Maharashtra	B-25602
10	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
11	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
12	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
13	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
14	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
15	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
16	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
17	03-04-2018	Jahan	Bhopal,Madhya Pradesh	B-25603
18	03-04-2018	Divsha	Jaipur,Rajasthan	B-25604
19	03-04-2018	Divsha	Jaipur,Rajasthan	B-25604
20	05-04-2018	Kasheen	Kolkata,West Bengal	B-25605

PROPERTIES
Name: Orders Data

APPLIED STEPS
Source: Expanded Order Details
X Filtered Rows

New Single Table created named “Orders Data” by merging “List of Orders” and “Order Details” Table Through Ribbon→Home Tab→Combine Group→Merge Queries→ Merge Queries as New→Join Kind→Full Outer (All rows from both) based on the relationship “ORDER ID”.

Handling Missing Data & Duplicate Data:

There is No missing values and Duplicate Data to remove.

Sorting and Filtering Data:

Sorting order date column:

Order date column sorted in descending order.

Order Date	CustomerName	Location	Order Details.Order ID
31-03-2019	Hitika	Indore,Madhya Pradesh	B-26100
30-03-2019	Bhishm	Mumbai,Maharashtra	B-26099
29-03-2019	Pinky	Kashmir,Jammu and Kashmir	B-26098
28-03-2019	Vini	Bangalore,Karnataka	B-26097
28-03-2019	Atharv	Kolkata,West Bengal	B-26096
28-03-2019	Monisha	Jaipur,Rajasthan	B-26095
27-03-2019	Deepak	Bhopal,Madhya Pradesh	B-26094
27-03-2019	Manju	Hyderabad,Andhra Pradesh	B-26091
27-03-2019	Ramesh	Ahmedabad,Gujarat	B-26092
27-03-2019	Sarita	Pune,Maharashtra	B-26093
27-03-2019	Sagar	Kohima,Nagaland	B-26090
26-03-2019	Bhuma	Gwalior,Madhya Pradesh	B-26098

PROPERTIES
Name
Orders Data
All Properties
APPLIED STEPS
Source
Expanded Order Details
Filtered Rows
Removed Duplicates
Sorted Rows

Filtering location column:

Order date sorted in “descending” and location filtered by a specific state “Tamil Nadu”.

Order Date	CustomerName	Location	Order Details.Order ID
22-03-2019	Aarushi	Chennai,Tamil Nadu	B-26081
14-02-2019	Aarushi	Chennai,Tamil Nadu	B-26018
09-02-2019	Kalyani	Chennai,Tamil Nadu	B-26008
15-11-2018	Akshay	Chennai,Tamil Nadu	B-25860
21-09-2018	Dinesh	Chennai,Tamil Nadu	B-25788
11-07-2018	Surabhi	Chennai,Tamil Nadu	B-25716
23-06-2018	Amisha	Chennai,Tamil Nadu	B-25698
08-04-2018	Aarushi	Chennai,Tamil Nadu	B-25608

PROPERTIES
Name
Orders Data
All Properties
APPLIED STEPS
Source
Expanded Order Details
Filtered Rows
Removed Duplicates
Sorted Rows
Filtered Rows1

Grouping and Aggregating Data:

Count of Each order ID:

Order Details table duplicated by right clicking on Order details table and Count of each order id is calculated using Group by function in Home tab→Transform group.

Query Editor

Query: [X] = Table.Group(#"Filtered Rows", {"Order ID"}, {"Count", each Table.RowCount(_), Int64.Type)})

Order ID	Count
B-25601	4
B-25602	5
B-25603	8
B-25604	2
B-25605	1
B-25606	1
B-25607	1
B-25608	4
B-25609	2
B-25610	6
B-25611	1
B-25612	1
B-25613	1
B-25614	2
B-25615	1
B-25616	4
B-25617	1
B-25618	2
B-25619	1
B-25620	1
B-25621	3

Properties: Name: Order Details (2)

Applied Steps: Source, Promoted Headers, Amount Data Type changed, Profit margin column created, Changed Type, Rounded Off, Profit Status column created, Filtered Rows, Count of each order id

Average Profit By category:

Category	Average profit
Furniture	9.456790123
Clothing	11.76290832
Electronics	34.07142857

Properties: Name: Order Details (2)

Applied Steps: Source, Promoted Headers, Amount Data Type changed, Profit margin column created, Changed Type, Rounded Off, Profit Status column created, Filtered Rows, Average profit by category

Average profit by category calculated using Group By function.

Total Amount by Sub-Category:

Sub-Category	Total Amount
Bookcases	56861
Stole	18546
Hankerchief	14608
Electronic Games	39168
Phones	46119
Saree	53511
Trousers	30039
Chairs	34222
Kurti	3361
T-shirt	7382
Shirt	7555
Leggings	2106
Tables	22614
Printers	58252
Accessories	21728
Furnishings	13484
Skirt	1946

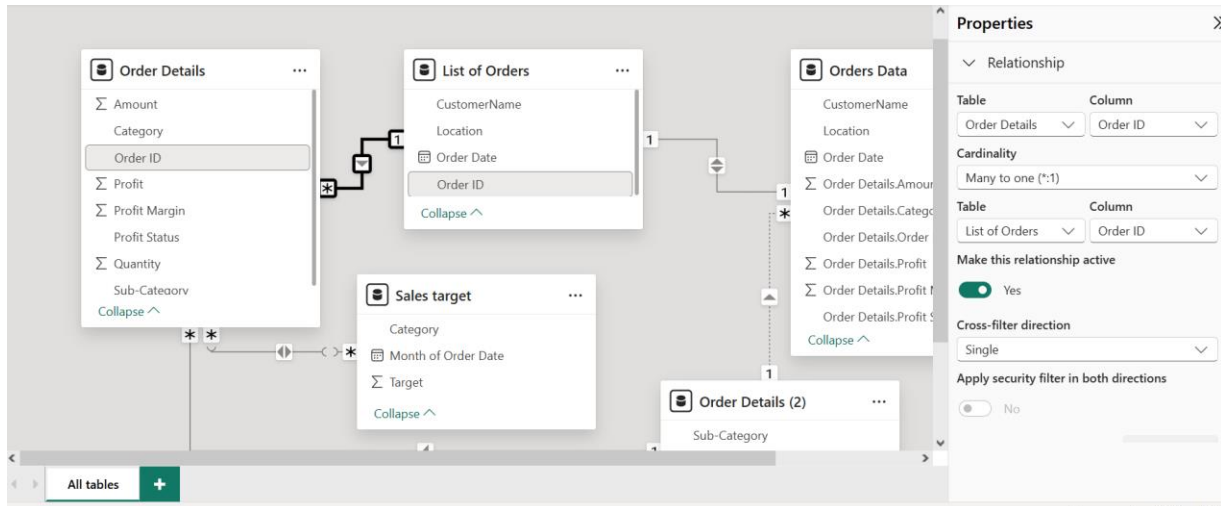
Properties: Name: Order Details (2)

Applied Steps: Source, Promoted Headers, Amount Data Type changed, Profit margin column created, Changed Type, Rounded Off, Profit Status column created, Filtered Rows, Total amount by sub-category

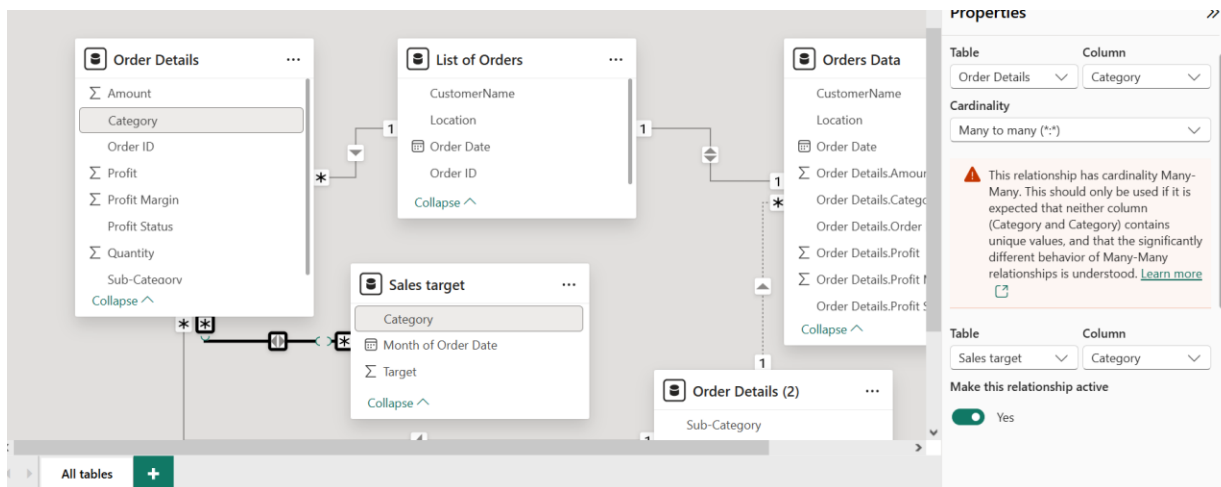
Total amount by sub-category is calculated using group y function.

Data Modeling:

Relationship between the “List of Orders” and “Order Details” tables using the ‘Order ID’ column:



Relationship between the “Order Details” and “Sales Target” tables based on the ‘Category’:



After clicking “Manage Relationship” relationships are active and working.