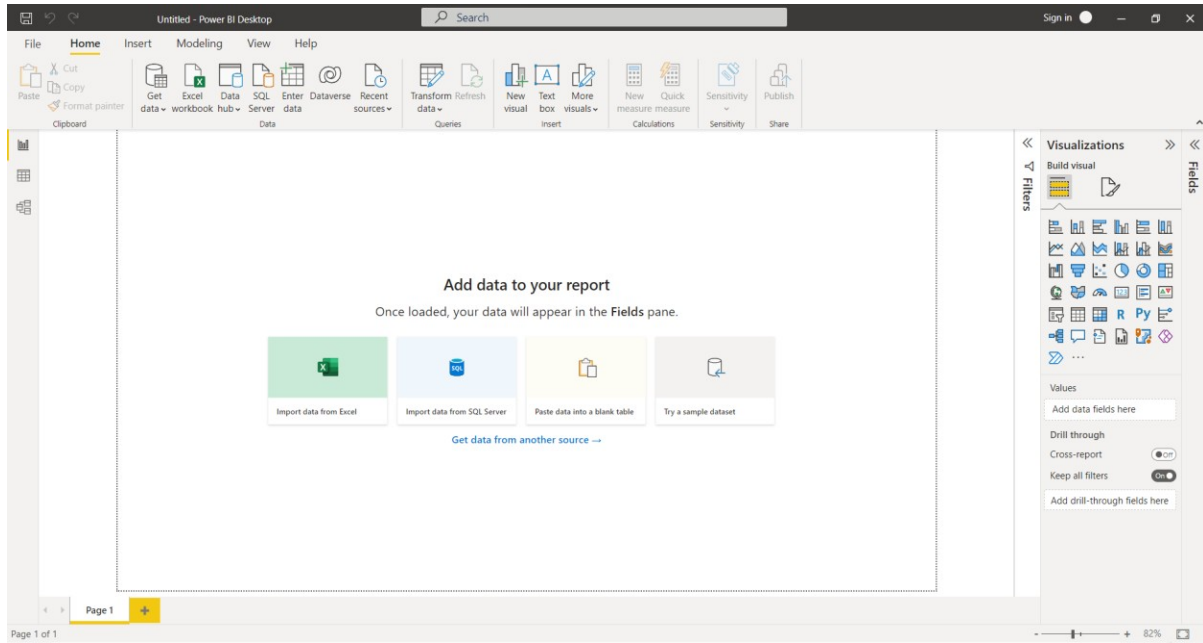


Nama : Ricky Martin Abdi Negara Purba

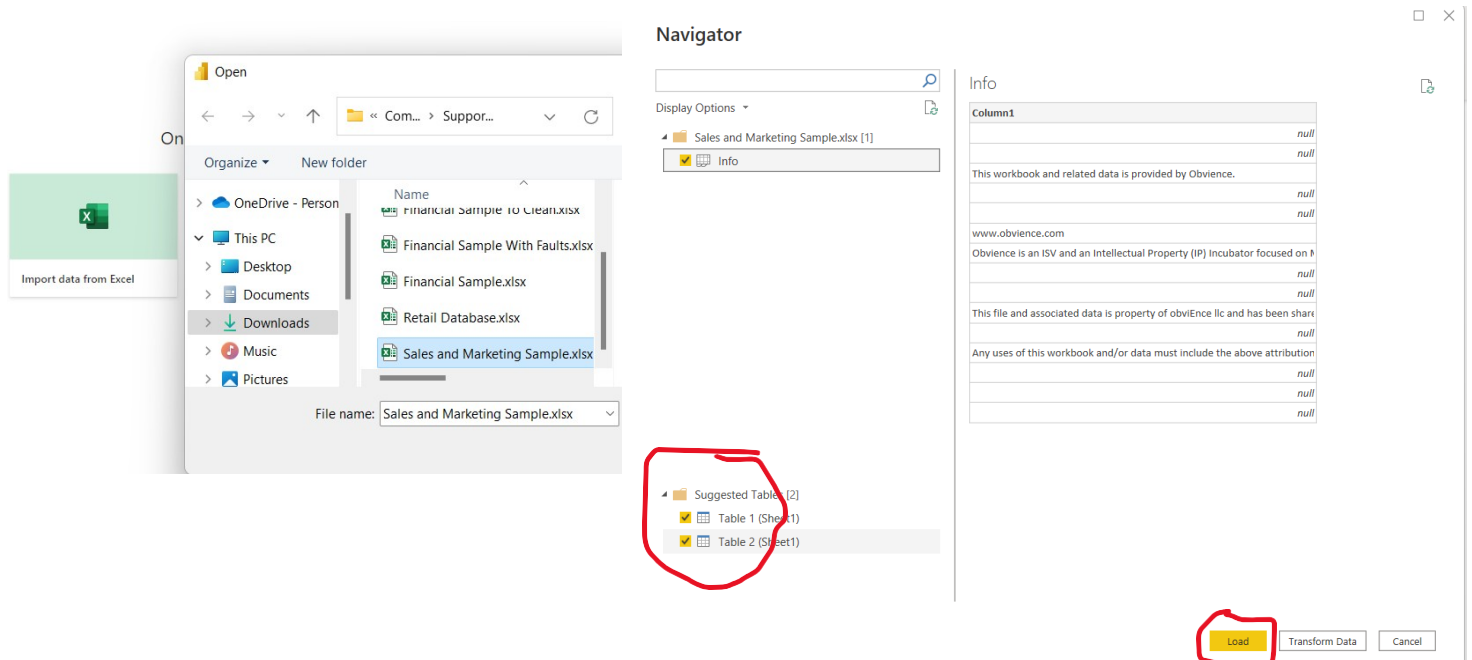
NIM : 191402126

Tampilan Laman Awal dari PowerBI



Input data.

Untuk menginput data kedalam PowerBI adalah dengan mengklik Button Get Data pada PowerBI, lalu klik Import Data From Excel, Select Table, dan data berhasil diinput kedalam PowerBI.



PowerBI sendiri memiliki banyak fitur yang terdapat didalamnya seperti Visualisasi Data, Transform Isi data, dsb.

The image shows the PowerBI Desktop interface with the 'Table tools' ribbon selected. The table displayed has the following data:

YQMD	(Multiple Items)	Column3	Column4
Region	All		
Row Labels	Total Units	Total Units R12Ms	Total Units YTD
2012	49058	49058	49058
Jan-12	4327	48565	4327
Feb-12	4235	48343	8562
Mar-12	3262	48181	11824
Apr-12	2549	47936	14373
May-12	2334	48027	16707
Jun-12	3438	48112	20145
Jul-12	3205	48555	22450

Melihat Isi Data

Menghapus data Yang tidak Perlu.

Navigator

to clean

Column1	Column2	Column3	Column4	Column5
Segment	Country	Product	Discount Band	
Government	Canada	Carretera	None	
Government	Germany	Carretera	None	
Midmarket	France	Carretera	None	
Midmarket	Germany	Carretera	None	
Midmarket	Mexico	Carretera	None	
Government	Germany	Carretera	None	
Midmarket	Germany	Montana	None	
Channel Partners	Canada	Montana	None	
Government	France	Montana	None	
Channel Partners	Germany	Montana	None	
Midmarket	Mexico	Montana	None	
Enterprise	Canada	Montana	None	
Small Business	Mexico	Montana	None	
Government	Germany	Montana	None	
Midmarket	United States of America	Montana	None	
Government	Canada	Paseo	None	
Midmarket	Mexico	Paseo	None	
Channel Partners	Canada	Paseo	None	
Government	Germany	Paseo	None	
Channel Partners	Germany	Paseo	None	

Load Transform Data Cancel

Masukkan data kedalam Tabel.

Home Transform Add Column View Tools Help

Use First Row as Headers

Table

Table.TransformColumnTypes(#"to clean_Sheet",{{"Column1", type text}, {"Column2", type text}, {"Column3", type text}, {"Column4", type text}, {"Column5", type text}, {"Column6", type text}, {"Column7", type text}}

Column1	Column2	Column3	Column4	Column5	Column6	Column7
Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
Government	Canada	Carretera	None	1618,5	3	
Government	Germany	Carretera	None	1321	3	
Midmarket	France	Carretera	None	2178	3	
Midmarket	Germany	Carretera	None	888	3	
Midmarket	Mexico	Carretera	None	2470	3	
Government	Germany	Carretera	None	1513	3	
Midmarket	Germany	Montana	None	921	5	
Channel Partners	Canada	Montana	None	2518	5	
Government	France	Montana	None	1899	5	
Channel Partners	Germany	Montana	None	1545	5	
Midmarket	Mexico	Montana	None	2470	5	
Enterprise	Canada	Montana	None	2665,5	5	

Disini data belum memiliki Label, untuk membuat label pada data kita bisa menekan Tombol use first row as Headers hingga Data dapat Dilabel dengan sempurna

= Table.TransformColumnTypes("#Promoted Headers1",{{"Segment", type text}, {"Country", type text}, {"Product", type text}, {"Discount Band", type text}, {"Units Sold", type number}, {"Manufacturing Price", type number}, {"Sale Price", type number}})							
A _C Segment	A _C Country	A _C Product	A _C Discount Band	1.2 Units Sold	1.2 Manufacturing Price	1.2 Sale Price	
1	null	null	null	null	null	null	
2	Government	Canada	Carretera	None	1618,5	3	
3	Government	Germany	Carretera	None	1321	3	
4	Midmarket	France	Carretera	None	2178	3	
5	Midmarket	Germany	Carretera	None	888	3	
6	Midmarket	Mexico	Carretera	None	2470	3	
7	Government	Germany	Carretera	None	1513	3	
8	Midmarket	Germany	Montana	None	921	5	
9	Channel Partners	Canada	Montana	None	2518	5	
10	Government	France	Montana	None	1899	5	
11	Channel Partners	Germany	Montana	None	1545	5	
12	Midmarket	Mexico	Montana	None	2470	5	
13	Enterprise	Canada	Montana	None	2665,5	5	

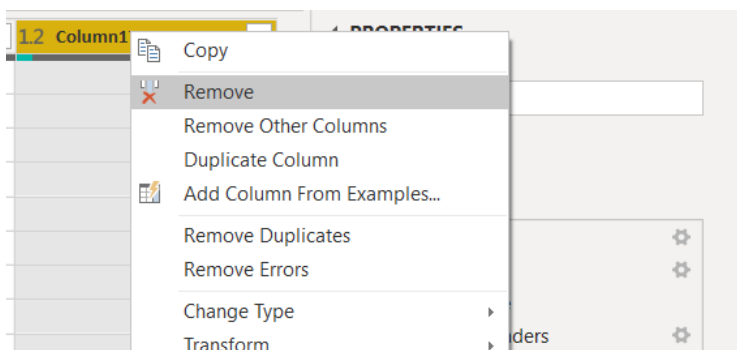
Ketika posisi header data sudah pas, data bisa lebih mudah diolah. Namun disini terdapat kendala dimana ada baris null pada data, untuk menghapus baris null dapat dilakukan dengan menekan tombol Remove Rows, lalu menekan tombol Remove Top Rows

= Table.RenameColumns("#Changed Type2",{{"Month Info", type text}, {"Year", type text}, {"Column17", type number}})							
1.2 Profit	A _C Date	1.2 Month Name	A _C Year	1.2 Column17			
1	null	null	Date				
2	16185	16185	01/01/2014				
3	13210	13210	01/01/2014	1 January	2014		814028,68
4	21780	10890	01/06/2014	6 June	2014		1473753,82
5	8880	4440	01/06/2014	6 June	2014		1473753,82
6	24700	12350	01/06/2014	6 June	2014		1473753,82
7	393380	136170	01/12/2014	12 December	2014		2717329,98
8	9210	4605	01/03/2014	3 March	2014		669866,87
9	7554	22662	01/06/2014	6 June	2014		1473753,82

Setelah data diremove, bis akita lihat tampilan data sesuai dengan yang dibawah ini

= Table.Skip("#Renamed Columns",1)							
A _C Segment	A _C Country	A _C Product	A _C Discount Band	1.2 Units Sold	1.2 Manufacturing Price	1.2 Sale Price	
1	Government	Canada	Carretera	None	1618,5	3	
2	Government	Germany	Carretera	None	1321	3	
3	Midmarket	France	Carretera	None	2178	3	
4	Midmarket	Germany	Carretera	None	888	3	
5	Midmarket	Mexico	Carretera	None	2470	3	
6	Government	Germany	Carretera	None	1513	3	
7	Midmarket	Germany	Montana	None	921	5	
8	Channel Partners	Canada	Montana	None	2518	5	
9	Government	France	Montana	None	1899	5	
10	Channel Partners	Germany	Montana	None	1545	5	
11	Midmarket	Mexico	Montana	None	2470	5	
12	Enterprise	Canada	Montana	None	2665,5	5	

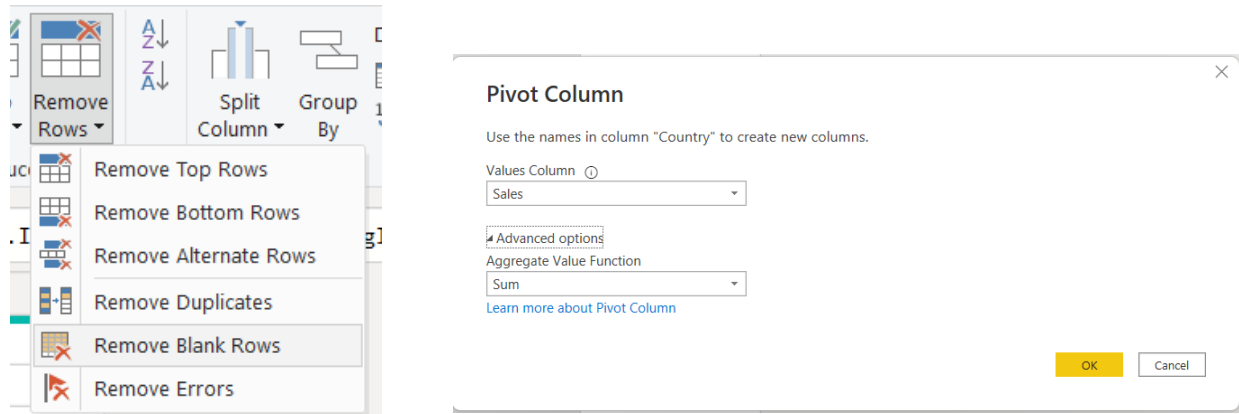
Pada Akhir data, terdapat Kolom yang tidak berlabel dan berisikan data, untuk menghapus kolom tersebut dapat menekan kolom yang dihapus dan drop kolom dengan klik Remove Columns



1.2 Month Number	A _C Month Name	A _C Year
1	January	2014
1	January	2014
6	June	2014
6	June	2014
6	June	2014
12	December	2014
3	March	2014
6	June	2014
6	June	2014
6	June	2014
6	June	2014
7	July	2014

Pivoting Data.

Setelah data diolah, kita akan menyatukan data (Pivoting Data) agar data lebih terstruktur dan mudah untuk diolah. Sebelum melakukan Pivoting data, kita harus menghapus variabel kosong (*null*) dengan cara drop table yang berisikan data *null*.



Remove Data

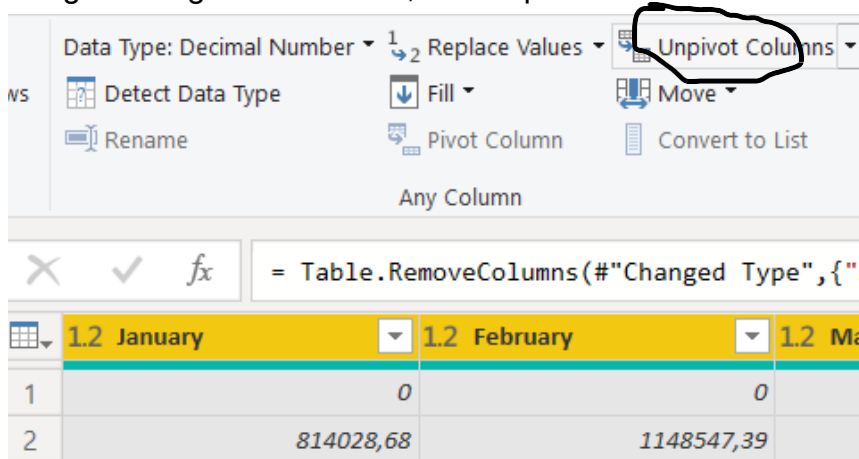
Pivoting Data

Setelah data selesai di Pivot, tampilan data menjadi seperti ini.

= Table.Pivot("#Removed Blank Rows", List.Distinct("#Removed Blank Rows"[Country]), "Country", "Sales", List.Sum)						
Segment	1.2 Canada	1.2 Germany	1.2 France	1.2 Mexico	1.2 United States of America	
1 Channel Partners	491164,14	336425,88	372090,36	234379,08	366534,18	
2 Enterprise	3967491,25	4086826,25	3890890,625	3315881,25	4350605	
3 Government	10741236,52	11452895,94	12127782,72	9791599,38	8390746,11	
4 Midmarket	510213,975	301344,75	593802,075	511136,4	465385,875	
5 Small Business	9177549	7327848	7369606,5	7096356	11456559	

Unpivoting Data.

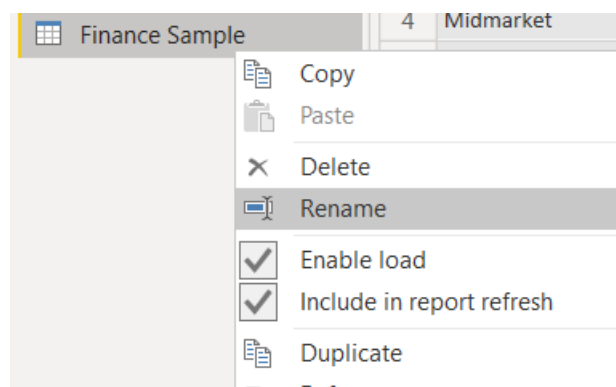
Ada beberapa jenis data yang terlanjur di Pivot namun setelah di Pivot data tidak bisa diolah dan harus dilakukan Unpivoting data. Untuk Mengunpivot data bisa dengan mengklik Transform, lalu Unpivot data.



	ABC Attribute	1.2 Value
1	January	0
2	February	0
3	March	0
4	April	0
5	May	0
6	June	0
7	July	0
8	August	0
9	September	763603,03
10	October	1657795,1
11	November	765502,3
12	December	601554,08

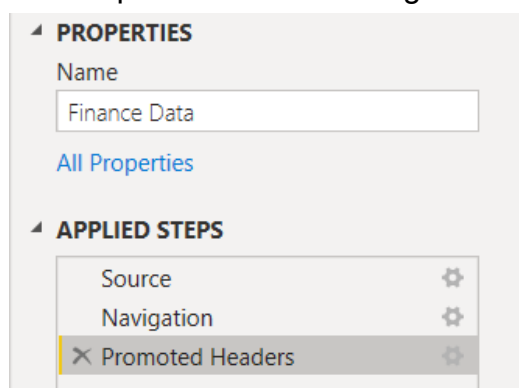
Rename Table.

Table bisa direname dengan klik kanan lalu Rename Table.



Step Back (*Redo*).

Ada kalanya kita harus me-*Redo* data yang sudah diolah, untuk mengembalikan data keposisi awal bisa dengan klik tanda silang dibawah ini.



Change Data Value.

Untuk mengubah/memperbaiki Value data, bisa dengan mengklik Replace Values, lalu mengubah value seperti dibawah ini.

December	2014
December	2014
Mach	2014
May	2014



Replace Values

Replace one value with another in the selected columns.

Value To Find

Mach

Replace With

March

- Advanced options

OK

Cancel

Replace Values

Replace one value with another in the selected columns.

Value To Find

null

Replace With

Unknown

> Advanced options

OK

Cancel

[illegible]

Jenis Table.

Jenis Table yang diinput dalam PowerBI adalah berbentuk text, dimana jika table berbentuk text angka yang terdapat didalamnya tidak bisa diolah. Untuk mengolahnya, kita bisa mengubah table yang berjenis Text menjadi Decimal Number dengan cara dibawah ini.

The screenshot shows the Power Query Editor interface. The 'Data Type' dropdown menu is open for the 'Sale Price' column, displaying various options: Decimal Number, Fixed decimal number, Whole Number, Percentage, Date/Time, Date, Time, Date/Time/Timezone, Duration, Text, True/False, and Binary. The background shows a table with columns: Discount Volume, Units Sold, Manufacturing Price, and Sale Price. The 'Manufacturing Price' column is highlighted with a yellow background.

Discount Volume	Units Sold	Manufacturing Price	Sale Price
1618,5	1321	12	20
1321	1321	12	20
2178	12	15	15
888	3	15	15
2470	3	15	15
1513	3	350	15
921	5	15	15
2518	5	12	12
1899	5	20	20

Merge Data.

Pada PowerBI, terdapat fitur untuk menggabungkan 2 buah tabel yaitu merge dan append table. Append table adalah mensisipkan table ke table utama.

The screenshot shows the Power Query Editor interface. The 'Merge Queries' dropdown menu is open, displaying options: Merge Queries, Append Queries, and Combine Files. The background shows a table with columns: Segment, Country, Product, Discount Band, Units Sold, Manufacturing Price, and Sale Price. The 'Segment' column is highlighted with a yellow background.

Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
1 Government	Germany	Carretera	None	1321	3	
2 Midmarket	Germany	Carretera	None	888	3	
3 Government	Germany	Carretera	None	1513	3	
4 Midmarket	Germany	Montana	None	921	5	
5 Channel Partners	Germany	Montana	None	1545	5	
6 Government	Germany	Paseo	None	2146	5	
7 Government	Germany	Paseo	None	1006	10	
8 Channel Partners	Germany	Paseo	None	367	10	

Append

Concatenate rows from three or more tables into a single table.

☐ Two tables ☒ Three or more tables

Available tables

Germany (Current)
Table 1 (Sheet1)
Table 2 (Sheet1)
to clean
horizontal
Finance Data
France
Mexico

Add >>

Tables to append

Germany (Current)

Tables to append

Germany (Current)
France

OK

Cancel

Table.Combine({#"Changed Type", France})						
Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
1 Government	Germany	Carretera	None	1321	3	
2 Midmarket	Germany	Carretera	None	888	3	
3 Government	Germany	Carretera	None	1513	3	
4 Midmarket	Germany	Montana	None	921	5	
5 Channel Partners	Germany	Montana	None	1545	5	
6 Government	Germany	Montana	None	2146	5	
7 Government	Germany	Paseo	None	1006	10	
8 Channel Partners	Germany	Paseo	None	367	10	
9 Midmarket	France	Carretera	None	2178	3	
10 Government	France	Montana	None	1899	5	
11 Enterprise	France	Velo	None	1804	120	
12 Midmarket	France	VTT	None	2178	250	
13 Small Business	France	VTT	None	2151	250	
14 Government	France	Amarilla	None	2750	260	

Bisa kita lihat tabel France sudah disisip kedalam table Germany. Jangan lupa untuk merename table menjadi France-Germany

France-Germany	5	C
France	6	C
Mexico	7	C
Query1	8	C
	9	M

Disini saya juga memasukkan table Mexico didalam, namun bisa dilihat data dari Table Mexico bersikan null. Untuk drop isi data table mexico bisa menekan tombol X pada Applied Steps

Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
1 Government	Germany	Carretera	None	1321	3	
2 Midmarket	Germany	Carretera	None	888	3	
3 Government	Germany	Carretera	None	1513	3	
4 Midmarket	Germany	Montana	None	921	5	
5 Channel Partners	Germany	Montana	None	1545	5	
6 Government	Germany	Montana	None	2146	5	
7 Government	Germany	Paseo	None	1006	10	
8 Channel Partners	Germany	Paseo	None	367	10	
9 Midmarket	France	Carretera	None	2178	3	
10 Government	France	Montana	None	1899	5	
11 Enterprise	France	Velo	None	1804	120	
12 Midmarket	France	VTT	None	2178	250	
13 Small Business	France	VTT	None	2151	250	
14 Government	France	Amarilla	None	2750	260	
15	null	null	null	null	null	null
16	null	null	null	null	null	null
17	null	null	null	null	null	null
18	null	null	null	null	null	null
19	null	null	null	null	null	null
20	null	null	null	null	null	null

	Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
1	Government	Germany	Carretera	None	1321	3	
2	Midmarket	Germany	Carretera	None	888	3	
3	Government	Germany	Carretera	None	1513	3	
4	Midmarket	Germany	Montana	None	921	5	
5	Channel Partners	Germany	Montana	None	1545	5	
6	Government	Germany	Montana	None	2146	5	
7	Government	Germany	Paseo	None	1006	10	
8	Channel Partners	Germany	Paseo	None	367	10	
9	Midmarket	France	Carretera	None	2178	3	
10	Government	France	Montana	None	1899	5	
11	Enterprise	France	Velo	None	1804	120	
12	Midmarket	France	VTT	None	2178	250	
13	Small Business	France	VTT	None	2151	250	
14	Government	France	Amarilla	None	2750	260	

Merge Table.

Merge Table ialah menyatukan 2 buah jenis table kedalam 1 Table. Bisa dilakukan dengan menekan tombol Merge Queries.

Merge Queries

Append Queries

Combine Files

Combine

Merge

Select a table and matching columns to create a merged table.

Sales_SalesOrderHeader (2)

PurchaseOrderNumber	AccountNumber	CustomerID	ContactID	SalesPersonID	TerritoryID	BillToA
PO522145787	10-4020-000676	676	378	279	5	
PO18850127500	10-4020-000117	117	216	279	5	
PO18473189620	10-4020-000442	442	281	282	6	
PO18444174044	10-4020-000227	227	564	282	6	

< >

Sales_Customer

CustomerID	TerritoryID	AccountNumber	CustomerType	rowguid	Mod
1	1	AW000000001	S	{3F5AE95E-B87D-4AED-95B4-C3797AFCB74F}	13/10/
2	1	AW000000002	S	{E552F657-A9AF-4A7D-A645-C429D6E02491}	13/10/
3	4	AW000000003	S	{130774B1-DB21-4EF3-98C8-C104BCD6ED6D}	13/10/
4	4	AW000000004	S	{FF862851-1DAA-4044-BE7C-3E85583C054D}	13/10/

< >

Join Kind

Inner (only matching rows)

☐ Use fuzzy matching to perform the merge

Fuzzy matching options

Similarity threshold (optional)

①

☒ Ignore case

☒ Match by combining text parts

The selection matches 5199 of 5199 rows from the first table, and 4173 of...

OK Cancel

Untuk menggabungkan 2 buah jenis table, kita harus melihat persamaan dari kedua dataset table tersebut. Bisa dilihat kalau kedua data memiliki kesamaan pada CustomerID sehingga data dicluster dan diurutkan dengan menjadikan CustomerID sebagai patokan data dan berikut hasil data Ketika sudah di Merge.

ABC 123	Comment	AB_C rowguid	ModifiedDate	AB_C ContactFirstName	AB_C ContactLastName	Sales_Customer
5		null {79B65321-39CA-4115-9CBA-8FE0903E12E...	08/07/2001	James	Hendergart	Table
7		null {AE51074C-108B-4274-BB03-87D670DDDB2...	08/10/2001	James	Hendergart	Table
7		null {270EB149-81E2-4564-9CA6-8A4502C08A...	08/01/2002	James	Hendergart	Table
9		null {5943CC34-5DC6-4CBB-80CB-4DE01571E5...	08/04/2002	James	Hendergart	Table
7		null {039F4B9C-19AC-4B60-B6B2-ASD66459A2...	08/07/2002	James	Hendergart	Table
9		null {0D6915F7-F25B-4310-9BB6-E68222CE25A...	08/10/2002	James	Hendergart	Table
5		null {10354519-180B-40B8-8FC1-347DE19B541...	08/01/2003	James	Hendergart	Table
9		null {D2745233-B05B-409C-93BB-4451569F42...	08/08/2001	Orlando	Gee	Table
8		null {1A116F86-71E4-40A2-A32C-4938D8977D...	08/11/2001	Orlando	Gee	Table
8		null {F57AB920-675E-4B1D-B43C-8EA091CF6F...	08/02/2002	Orlando	Gee	Table
5		null {62991BDA-C42D-494F-9EF1-2754BEC25F...	08/05/2002	Orlando	Gee	Table
8		null {738DC42D-D03B-48A1-9822-F95A67EA73...	08/07/2001	Takiko	Collins	Table
8		null {8B901788-017A-4714-8E6A-717A64299D...	08/10/2002	Takiko	Collins	Table
8		null {8A533BE6-0669-470A-B361-796DD1CD0E...	08/08/2002	Keith	Harris	Table
8		null {1FAAD98B-1DE0-4880-A804-9FB8B6F289...	08/11/2002	Keith	Harris	Table
8		null {D91B9131-18A4-4A11-BC3A-90B6F53E9D...	08/07/2001	Jauna	Elson	Table
8		null {181D7624-F907-41B6-90B8-B95899CA2B...	08/10/2001	Jauna	Elson	Table
9		null {2C419B24-B1F6-4D9D-B2BF-1E68389B47...	08/01/2002	Jauna	Elson	Table
8		null {E2DB78F0-AB7A-4755-87BE-ED52B478A8...	08/04/2002	Jauna	Elson	Table
9		null {61DF816F-0422-4A7A-9F94-C50FF7FF4D5...	08/07/2002	Jauna	Elson	Table
5		null {EE498ACF-F522-4937-AB69-BAD7D86ADE...	08/10/2002	Jauna	Elson	Table
8		null {9D07E19C-0672-42E6-BC61-765BCEED32...	08/01/2003	Jauna	Elson	Table
5		null {0F0EB783-FA76-466D-9A0A-2F88C1C7ED...	08/09/2001	Donna	Carreras	Table
5		null {9718B3AD-7806-49F0-BC15-CE6097D629...	08/12/2001	Donna	Carreras	Table
8		null {4AD60909-9C6D-4A8B-A333-A35AD0EFC9...	08/03/2002	Donna	Carreras	Table
8		null {C7B82642-1411-4EF1-93CA-D2A988BDF9...	08/06/2002	Donna	Carreras	Table
8		null {FF062776-9112-49EE-941C-BB2072A41E12}	08/09/2002	Donna	Carreras	Table

Pada PowerBI kita bisa melihat dan membuat relasi antar dua buah jenis database. Yaitu dengan membuat Relationship dari kedua buah data. Untuk membuat Relationship bisa dengan klik new pada manage relationship.

Manage relationships

Active	From: Table (Column)	To: Table (Column)
<input checked="" type="checkbox"/>	Finance Data (Segment)	to clean (Segment)
<input checked="" type="checkbox"/>	France (Segment)	to clean (Segment)
<input checked="" type="checkbox"/>	France-Germany (Segment)	to clean (Segment)
<input checked="" type="checkbox"/>	Person_Address (StateProvinceID)	Person_StateProvince (StateProvinceID)
<input checked="" type="checkbox"/>	Sales_SalesOrderHeader (2) (AccountNumber)	Sales_Customer (AccountNumber)

New...

Autodetect...

Edit...

Delete

Close

Create relationship

Select tables and columns that are related.

Sales_SalesOrderHeader (2)

ShipDate	Status	OnlineOrderFlag	SalesOrderNumber	PurchaseOrderNumber	AccountNumber	Cu
14 February 2002	5	-1	SO45389		10-4030-011090	
27 February 2002	5	-1	SO45463		10-4030-011171	
07 March 2002	5	-1	SO45512		10-4030-011175	

Sales_Customer

CustomerID	TerritoryID	AccountNumber	CustomerType	rowguid	Modif
11015	4	AW00011015	I	{F791BD74-EB82-4631-B9FC-F9FEE621FD13}	13/10/2
11016	4	AW00011016	I	{023843CA-25FB-42BF-AC37-FAF6F4120DAC}	13/10/2
11023	4	AW00011023	I	{A2833BD8-44A8-4665-808E-33E19ECD7F54}	13/10/2

CardinalityCross filter direction

☐ Make this relationship active☐ Apply security filter in both directions

☐ Assume referential integrity

There's already a relationship between these two columns.

OKCancel

Dalam membuat Relationship, kita harus memastikan kedua buah data memiliki keterkaitan antar satu dengan yang lain. Jika bisa dibuat Relations dari kedua data maka data akan ditampilkan sebagai berikut.

The screenshot shows the Microsoft Power BI Desktop interface. The main workspace displays a relationship diagram with two tables: **Sales_SalesOrderHeader** and **Sales_Customer**. The relationship is established between the **CustomerID** column in **Sales_SalesOrderHeader** and the **CustomerID** column in **Sales_Customer**. The relationship is marked with a 1-to-many symbol (a line with a '1' and a line with a '*' and an arrow pointing from the '1' to the '*').

The **Fields** pane on the right shows the list of tables and columns available in the data model. The **Properties** pane on the left shows the relationship settings, including the relationship name, the columns involved, and the cardinality.

Pada PowerBI kita bisa melihat Column Distribution dan Mengubah Query dengan fungsi Advance Director pada PowerBI

Advanced Editor

Sales_SalesOrderHeader (2)

Display Options ?

```
let
    Source = Excel.Workbook(File.Contents("C:\Users\ARANYA\Downloads\Compressed\Support Files\Retail Database.xlsx"), null, true),
    Sales_SalesOrderHeader_Sheet = Source{[Item="Sales_SalesOrderHeader",Kind="Sheet"]}[Data],
    #"Promoted Headers" = Table.PromoteHeaders(Sales_SalesOrderHeader_Sheet, [PromoteAllScalars=true]),
    #"Changed Type" = Table.TransformColumnTypes(#"Promoted Headers",{{"SalesOrderID", Int64.Type}, {"RevisionNumber", Int64.Type}, {"OrderDate", Int64.Type}}, {"SalesOrderID", Int64.Type}, {"RevisionNumber", Int64.Type}, {"OrderDate", Int64.Type}),
    #"Merged Queries" = Table.NestedJoin(#"Changed Type", {"CustomerID"}, Sales_Customer, {"CustomerID"}, "Sales_Customer", JoinKind.Inner)
in
    #"Merged Queries"
```