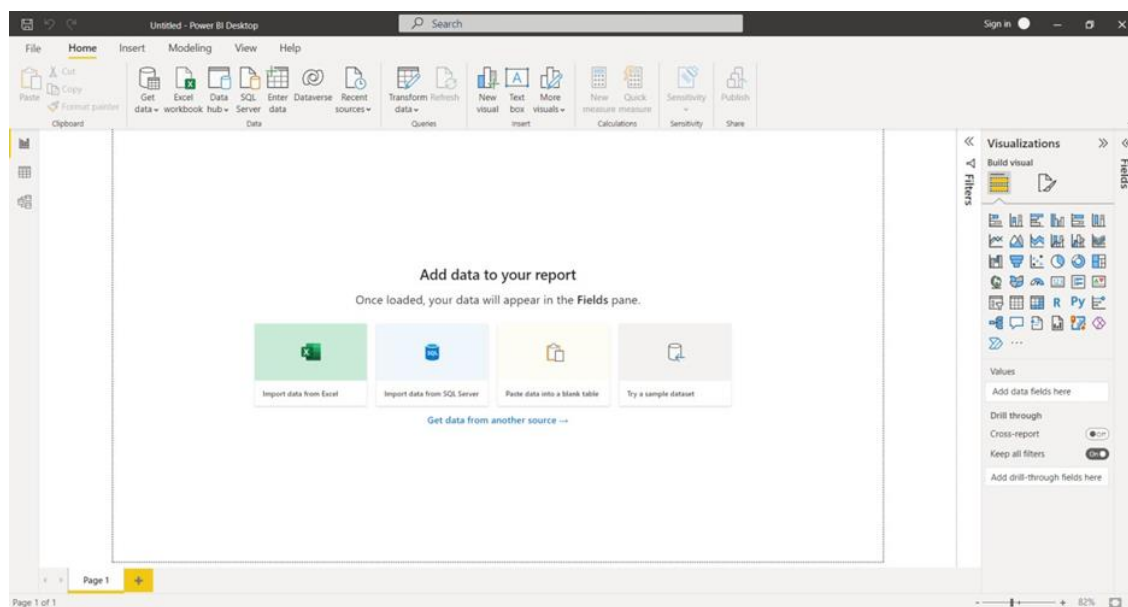


Nama : Meizar Fachriza
NIM : 191402021
Kelas : Kom C
Matkul : Data Warehouse dan Bisnis Intelligence

Microsoft Power BI

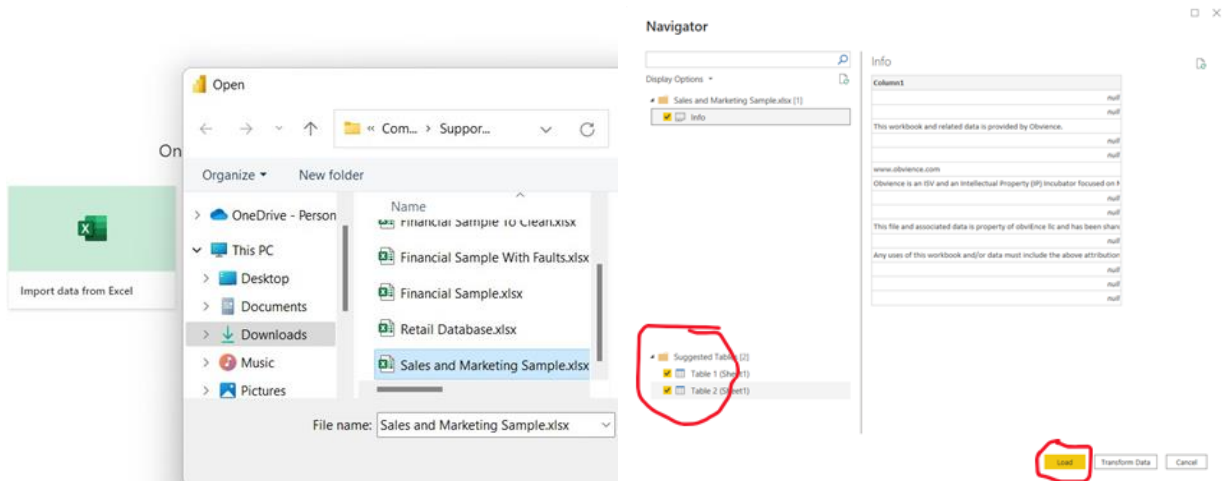
PowerBI merupakan software yang memiliki fungsi untuk menggabungkan, menganalisis, membuat visualisasi, dan membagikan data. Semua fitur itu dikemas dalam tampilan yang intuitif. Tak hanya itu, Power BI sangat terintegrasi dengan Excel, Azure, dan produk-produk Microsoft lainnya. Ini tentu memudahkan proses pengolahan data.

- **Tampilan Halaman Awal dari Power BI**



- **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.



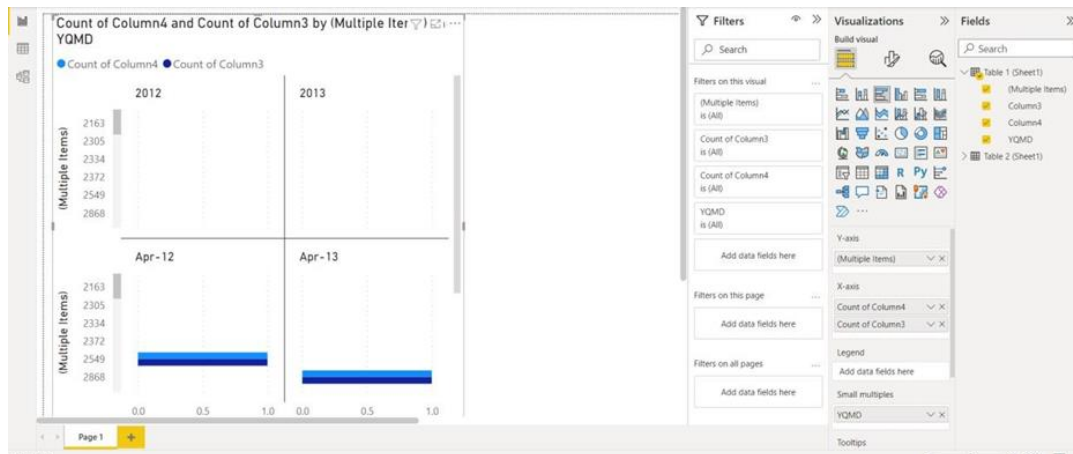
PowerBI sendiri memiliki banyak fitur yang terdapat didalamnya seperti Visualisasi Data, Transform Isi data, dsb.

- **Melihat Isi Data**

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	2205	48565	21450

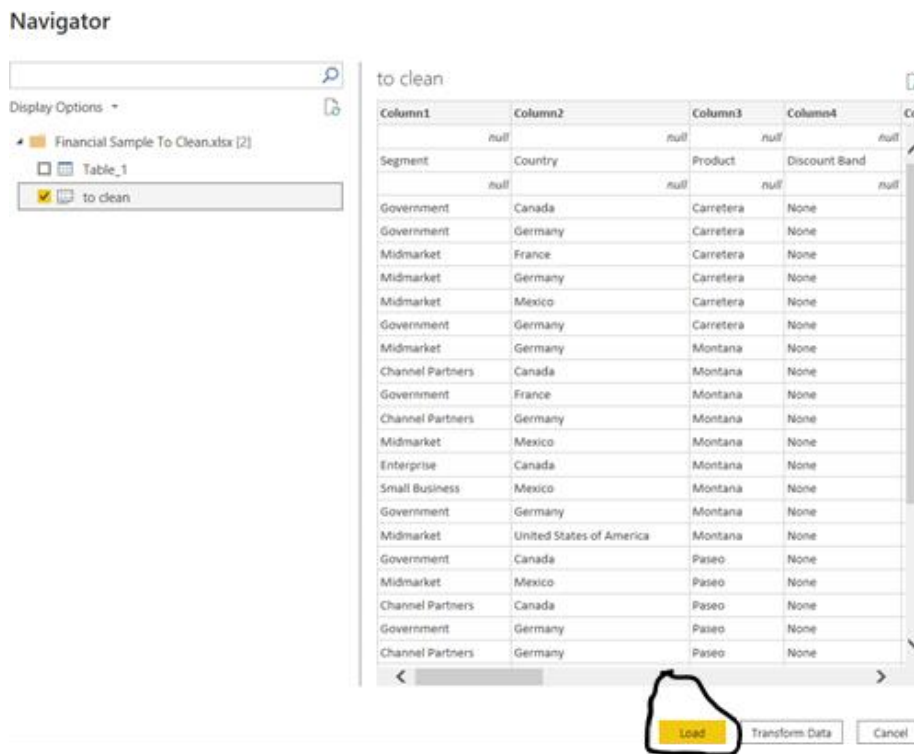
- Visualisasi Data



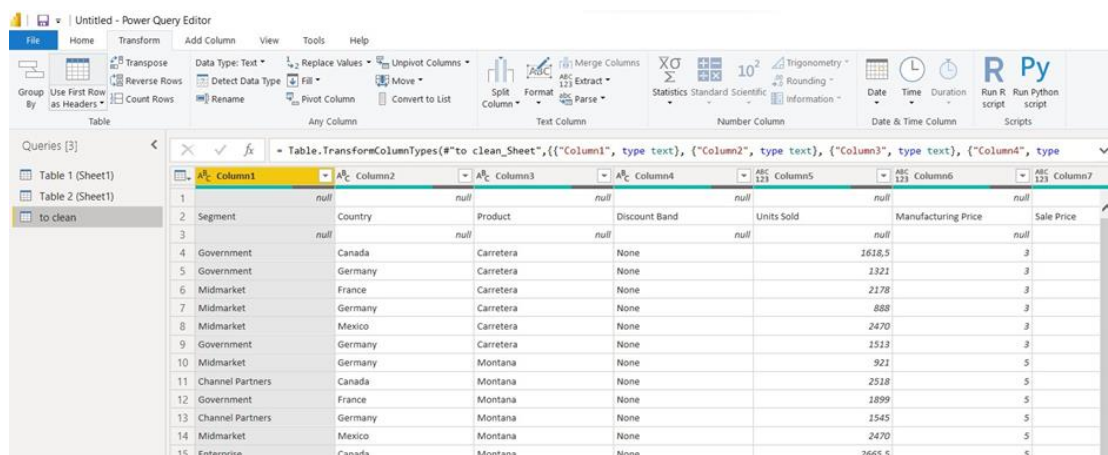
- Power Query Editor yang memiliki fungsi untuk mengolah data dengan mudah pada PowerBI

YQMD	Column3	Column4
1	49058	49058
2 Jan-12	4327	4327
3 Feb-12	4285	4285
4 Mar-12	4881	4881
5 Apr-12	4796	4796
6 May-12	48027	48027
7 Jun-12	48112	48112
8 Jul-12	4856	4856
9 Aug-12	49003	49003
10 Sep-12	48784	48784
11 Oct-12	48953	48953
12 Nov-12	49080	49080
13 Dec-12	49058	49058
14	47250	47250
15 Jan-13	4202	4202
16 Feb-13	4034	4034
17 Mar-13	48875	48875
18 Apr-13	48954	48954
19 May-13	49252	49252
20 Jun-13	49358	49358
21 Jul-13	49216	49216
22 Aug-13	48820	48820
23 Sep-13	47278	47278
24 Oct-13	47178	47178
25 Nov-13	47266	47266
26 Dec-13	47250	47250
27 Grand Total	47250	47250

- Menghapus data Yang tidak Perlu



- Masukkan data kedalam Tabel



- 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

fx = 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}})

Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
1						
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

fx = Table.RenameColumns(#"Changed Type2",{{"Month Info", type text}, {"Year", type text}})

Remove Top Rows

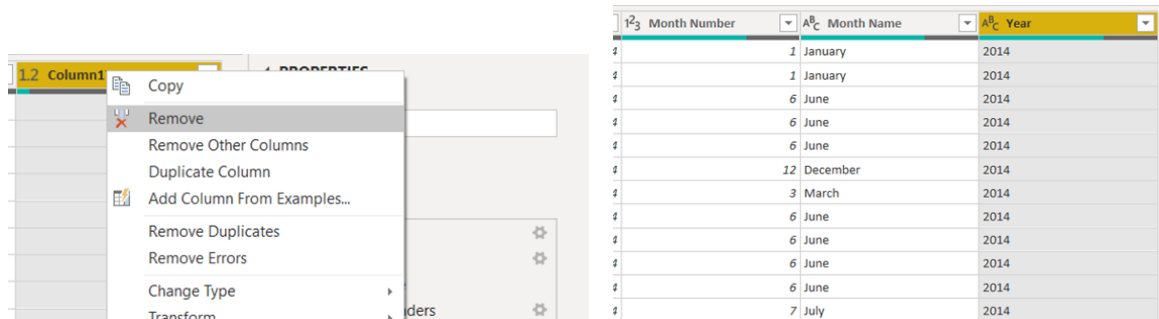
Profit	Date	Month	Year	Column17
1				
2	16185	01/01/2014	2014	814028,68
3	13210	01/01/2014	2014	814028,68
4	21780	01/06/2014	2014	1473753,82
5	8880	01/06/2014	2014	1473753,82
6	24700	01/06/2014	2014	1473753,82
7	393380	01/12/2014	2014	2717329,98
8	9210	01/03/2014	2014	669866,87
9	7554	01/06/2014	2014	1473753,82

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

fx = Table.Skip(#"Renamed Columns",1)

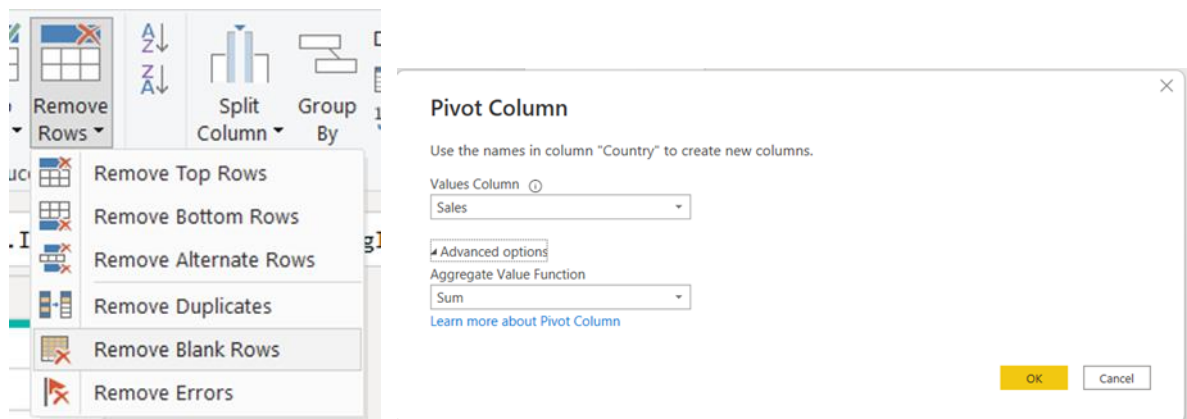
Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
1	Government	Canada	Carretera	None	1618,5	3
2	Government	Germany	Carretera	None	1321	3
3	Midmarket	France	Carretera	None	2178	3
4	Midmarket	Germany	Carretera	None	888	3
5	Midmarket	Mexico	Carretera	None	2470	3
6	Government	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



• 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.



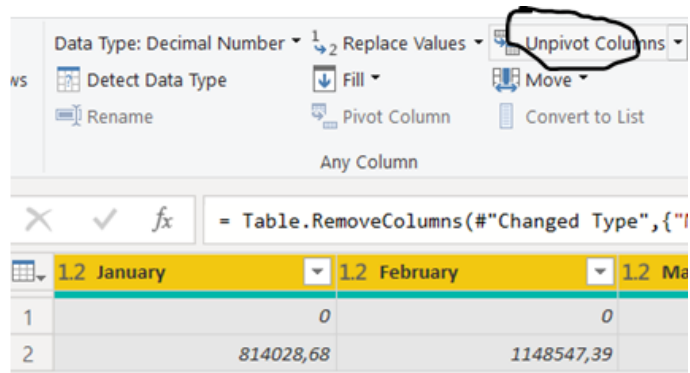
• Remove Data

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	Canada	Germany	France	Mexico	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**

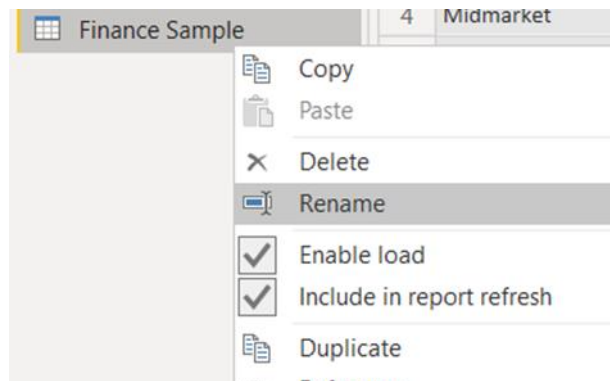
Ada beberapa jenis data yang terlanjur di Pivot namun setelah di Pivot data tidak bisa diolah dan harus dilakukan Unpivoting data. Untuk Mengunpivot data bisa dengan mengklik Transform, lalu Unpivot data



	1.2 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	601551,08

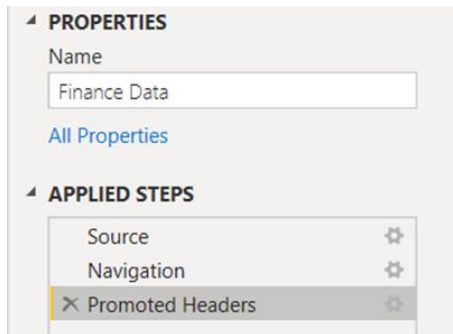
- **Rename Table**

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

Replace With

> Advanced options

OK Cancel

[illegible][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 BI Desktop interface. The 'Data Type' dropdown menu is open for the 'Sale Price' column. The menu lists various data types, with 'Decimal Number' selected. The background table shows data for 'Discount Volume', 'Units Sold', 'Manufacturing Price', and 'Sale Price'.

Discount Volume	Units Sold	Manufacturing Price	Sale Price
one	1618,5	123	20
one	1321	123	20
one	2178	1.2	15
one	888	3	15
one	2470	3	15
one	1513	3	350
ontana	none	5	15
ontana	None	5	12
ontana	None	5	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 ribbon has the 'Merge Queries' button highlighted. The table below shows data for 'Segment', 'Country', 'Product', 'Discount Band', 'Units Sold', 'Manufacturing Price', and 'Sale Price'.

Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price
1 Government	Germany	Carretera	None	2321	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	20	

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	1322	8	
2 Midmarket	Germany	Carretera	None	888	8	
3 Government	Germany	Carretera	None	1513	8	
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	3	
11 Enterprise	France	Velo	None	1804	220	
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

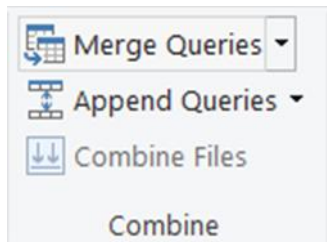
Disini saya juga memasukkan table Mexico didalam, namun bisa dilihat data dari Table Mexico bersikan null. Untuk drop isi data table mexico bisa menekan tombol X pada Applied Steps

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	Amanilla	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

Table.Combine({#"Changed Type", France})							Query Settings
Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price	<div>PROPERTIES</div> <div>Name</div> <div>France-Germany</div> <div>All Properties</div> <div>APPLIED STEPS</div> <div>Source</div> <div>Navigation</div> <div>Promoted Headers</div> <div>Changed Type</div> <div>Appended Query</div>
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	Amanilla	None	2750	260		

- **Merge Table**

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



×

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	AW00000001	S	{3F5AE95E-B87D-4AED-95B4-C3797AFCB74F}	13/10/
2	1	AW00000002	S	{E552F657-A9AF-4A7D-A645-C429D6E02491}	13/10/
3	4	AW00000003	S	{130774B1-DB21-4EF3-98C8-C104BCD6ED6D}	13/10/
4	4	AW00000004	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)

☒ 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	ABC rowguid	ModifiedDate	ABC ContactFirstName	ABC ContactLastName	Sales_Customer
		null {79B65321-39CA-4115-9CBA-8FE0903E12E...	08/07/2001	James	Hendergart	Table
		null {AE51074C-108B-4274-BB03-87D670DOB2...	08/10/2001	James	Hendergart	Table
		null {270EB149-81E2-4564-9CA6-8A4502C08A...	08/01/2002	James	Hendergart	Table
		null {5943CC34-50C6-4C8B-80CB-4DE01571E5...	08/04/2002	James	Hendergart	Table
		null {039F4B9C-19AC-4B60-B6B2-A5D66459A2...	08/07/2002	James	Hendergart	Table
		null {0D6915F7-F25B-4310-98B6-E68222CE25A...	08/10/2002	James	Hendergart	Table
		null {10354519-180B-40B8-8FC1-947DE19B541...	08/01/2003	James	Hendergart	Table
		null {D2745233-B05B-409C-93BB-4451569F42...	08/08/2001	Orlando	Gee	Table
		null {1A116F86-71E4-40A2-A32C-4938D8977D...	08/11/2001	Orlando	Gee	Table
		null {F57AB920-675E-4B1D-B43C-8EA091CF6F...	08/02/2002	Orlando	Gee	Table
		null {62991BDA-C42D-494F-9EF1-2754BEC25F...	08/05/2002	Orlando	Gee	Table
		null {738DC42D-D03B-48A1-9822-F95A67EA73...	08/07/2001	Takiko	Collins	Table
		null {B8901788-017A-4714-8E6A-717A64299D...	08/10/2002	Takiko	Collins	Table
		null {8A533BE6-0669-470A-B361-796DD1CD0E...	08/08/2002	Keith	Harris	Table
		null {1FAAD98B-1DE0-4B80-A804-9FB8B6F289...	08/11/2002	Keith	Harris	Table
		null {D91B9131-18A4-4A11-BC3A-90B6F53E9D...	08/07/2001	Jauna	Elson	Table
		null {181D7624-F907-41B6-90B8-B95899CA2B...	08/10/2001	Jauna	Elson	Table
		null {2C419B24-B1F6-4D9D-B2BF-1E68389B47...	08/01/2002	Jauna	Elson	Table
		null {E2DB78F0-AB7A-4755-87BE-ED52B478A8...	08/04/2002	Jauna	Elson	Table
		null {61DF816F-0422-4A7A-9F94-C50FF7FF4D5...	08/07/2002	Jauna	Elson	Table
		null {EE498ACF-F522-4937-AB69-BAD7D86ADE...	08/10/2002	Jauna	Elson	Table
		null {9D07E19C-0672-42E6-BC61-765BCEED32...	08/01/2003	Jauna	Elson	Table
		null {0F0EB783-FA76-466D-9A0A-2F88C1C7ED...	08/09/2001	Donna	Carreras	Table
		null {9718B3AD-7806-49F0-BC15-CE6097D629...	08/12/2001	Donna	Carreras	Table
		null {4AD60909-9C6D-4A8B-A333-A35AD0EFC9...	08/03/2002	Donna	Carreras	Table
		null {C7B82642-1411-4EF1-93CA-D2A988BDF9...	08/06/2002	Donna	Carreras	Table
		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	null	10-4030-011090	
27 February 2002	5	-1	SO45463	null	10-4030-011171	
07 March 2002	5	-1	SO45512	null	10-4030-011175	

Sales_Customer

CustomerID	TerritoryID	AccountNumber	CustomerType	rowguid	Modif
11015	4	AW00011015	I	{F791BD74-E882-4631-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

Cardinality: Cross filter direction:

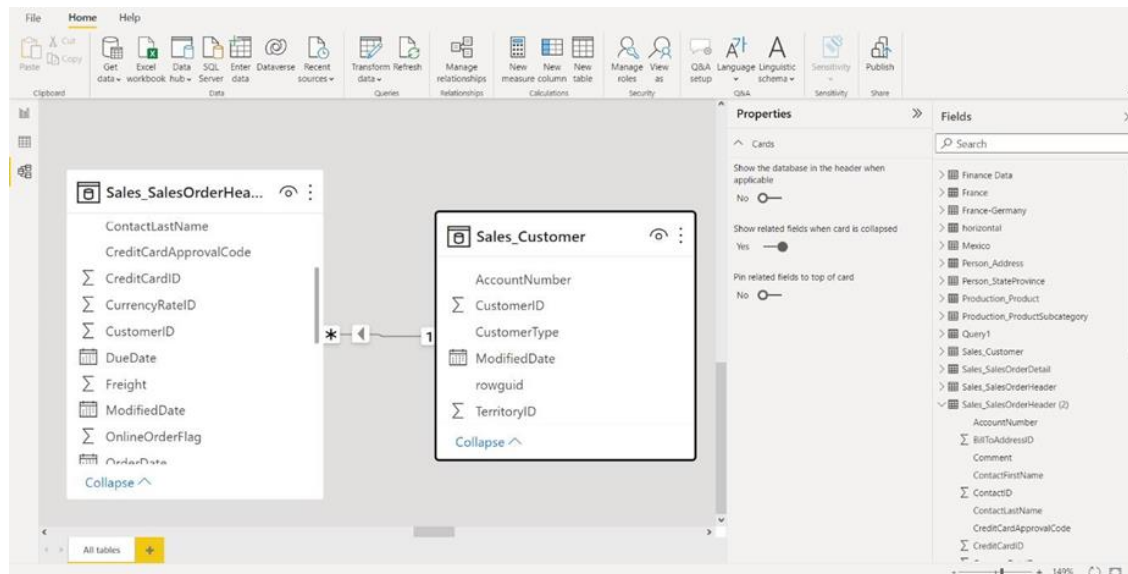
☐ Make this relationship active ☐ Apply security filter in both directions

☐ Assume referential integrity

! There's already a relationship between these two columns.

OK Cancel

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.



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", Date.Type}, {"DueDate", Date.Type}, {"ShipDate", Date.Type}, {"Status", Text.Type}, {"OnlineOrderDate", Date.Type}},),
    #"Merged Queries" = Table.NestedJoin(#"Changed Type", {"CustomerID"}, Sales_Customer, {"CustomerID"}, "Sales_Customer", JoinKind.Inner)
in
    #"Merged Queries"
```