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Power BI

Power BI adalah layanan yang disediakan oleh Microsoft untuk mengubah sumber data tidak terkait menjadi informasi koheren dan interaktif, yang memungkinkan *data analyst* terhubung sumber data, memvisualisasikan atau menemukan hal yang penting serta membagikan hasil temuan tersebut.

Get Started with Power BI

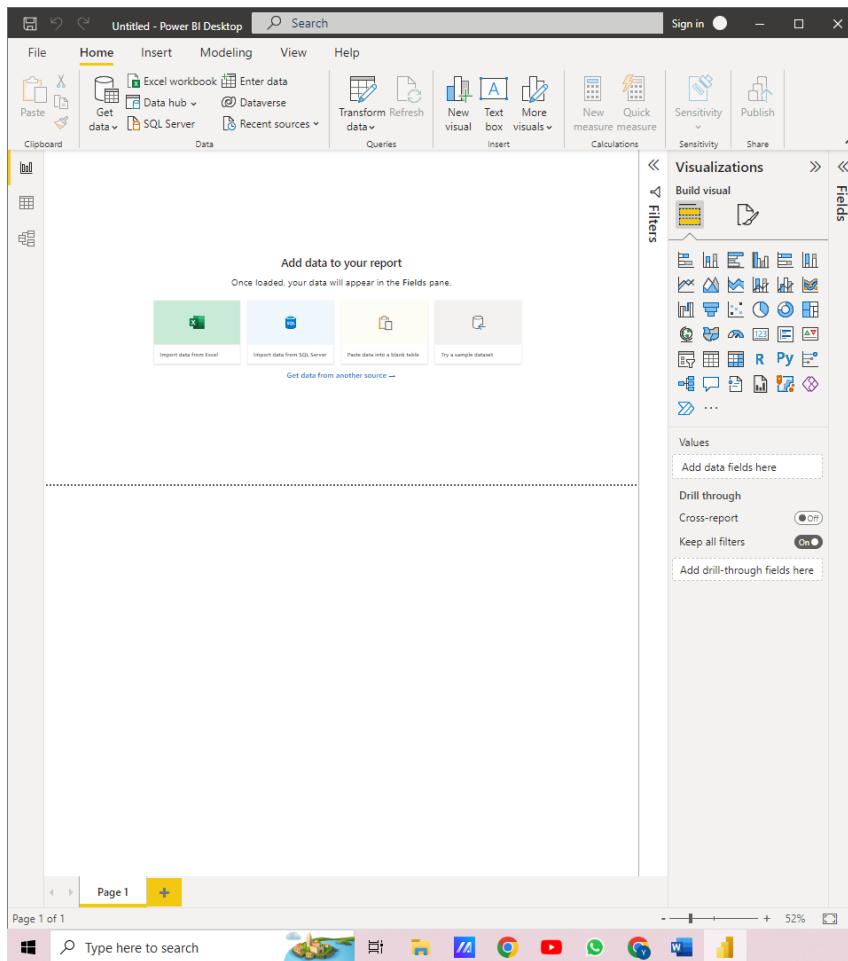
Install Power BI Desktop, Power BI Service, dan Power BI Mobile Apps untuk memulai *guided tour*. Aktivitas yang akan Anda ikuti adalah sebagai berikut :

1. Membentuk report (laporan) dari data yang diserahkan kepada Power BI Desktop.
2. Data akan dipublikasi ke Power BI Service sebagai wadah membuat visualisasi maupun dashboard.
3. Membagikan dashboard kepada satu tim kerja maupun orang lain.
4. Melihat dan berinteraksi dengan dashboard dan report dengan Power BI Mobile Apps.

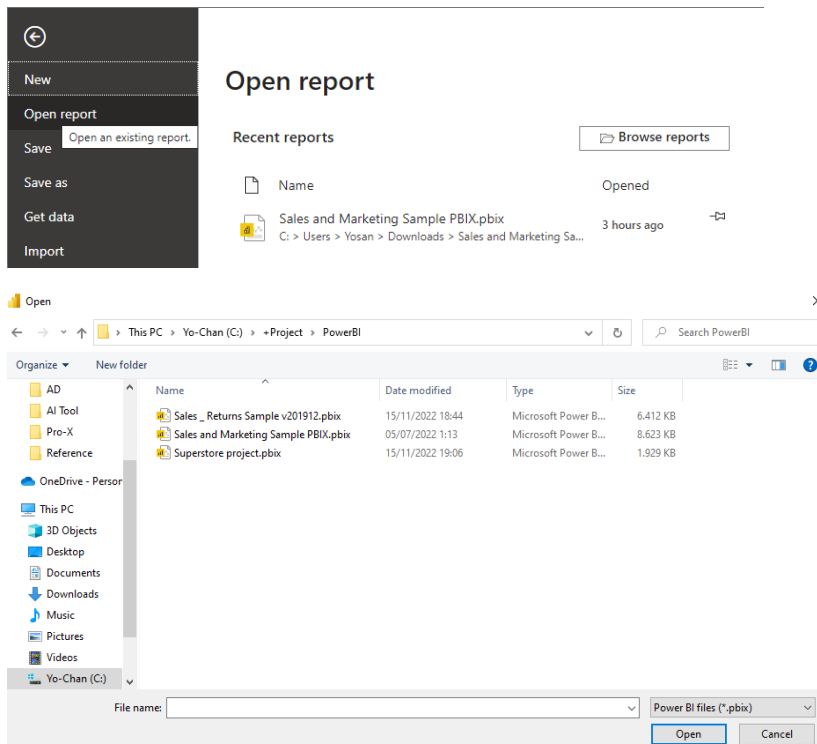
Visualization

Visualisasi adalah representasi atau perwakilan data seperti bagan, grafik, map berwarna. Kelengkapan Power BI mencakup segala jenis data dan berpeluang untuk terus berkembang. Tujuan visualisasi adalah menyajikan data dengan memberi konteks dan informasi yang informatif.

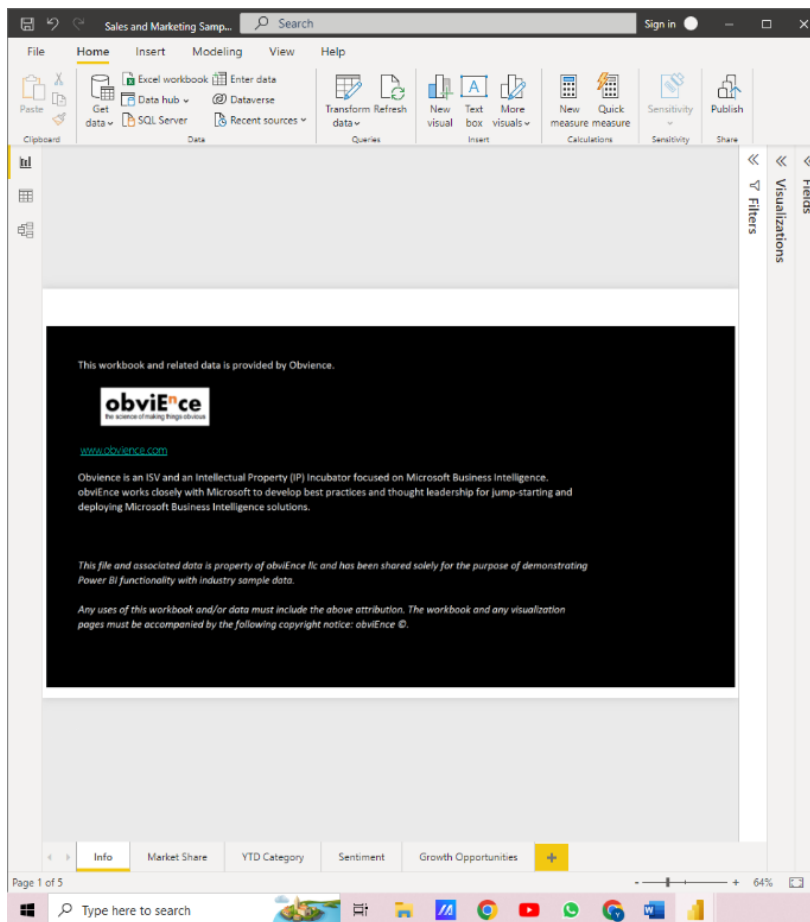
Pada contoh kali ini, data **Sales and Marketing Sample** dari Microsoft akan digunakan. Untuk langkah awal kita dapat membuka menu report dari Power BI Desktop lewat File->Open Report->Browse Reports dan setelah itu pilih file yang akan kita buka.



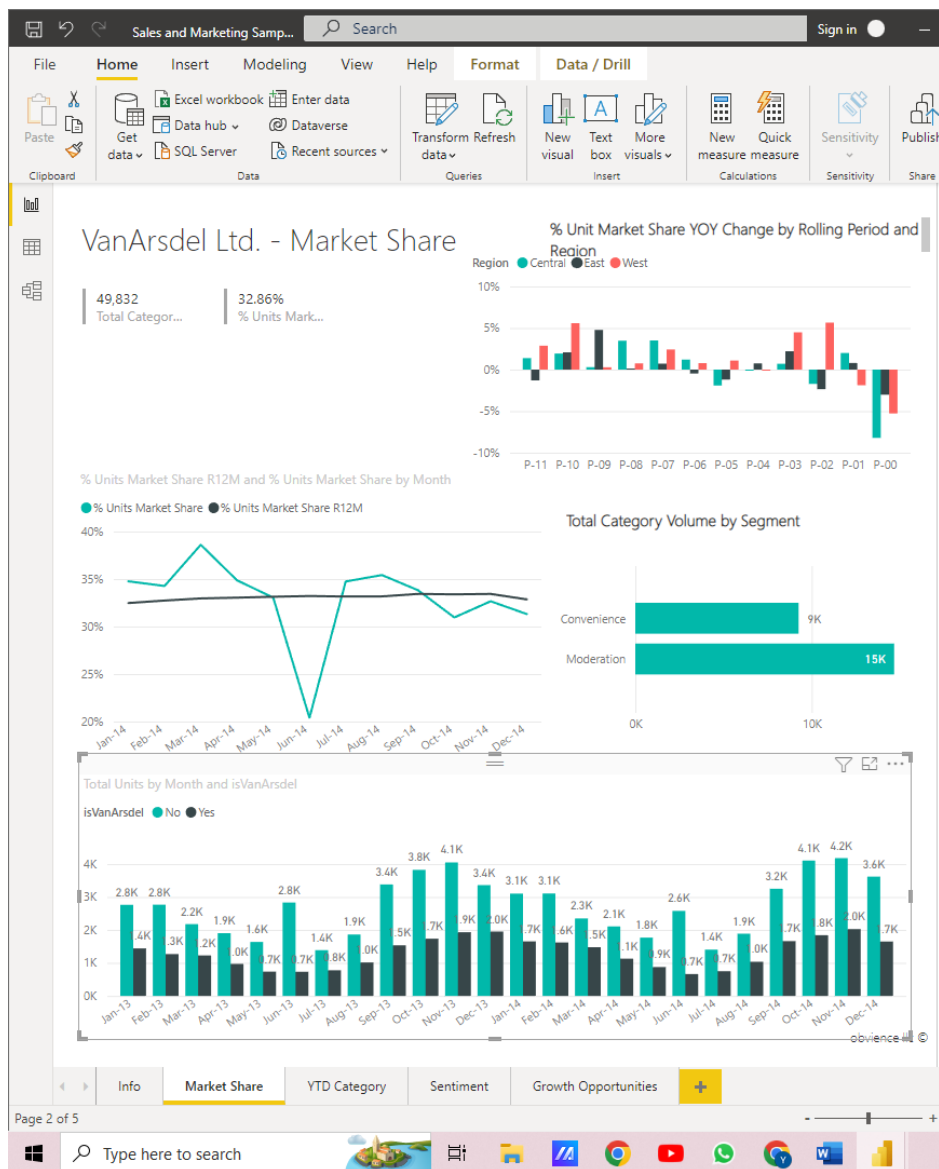
Interface Power BI



Data Sales and Marketing Sample



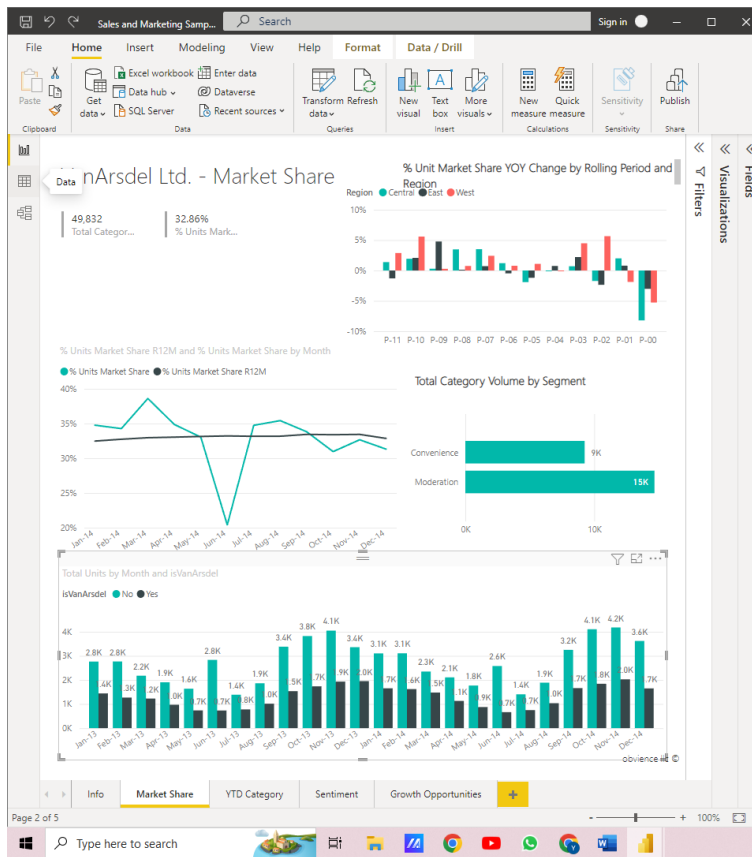
Dapat kita lihat **Sales and Marketing Sample** memiliki beberapa widget yang berisi informasi seperti tampilan Excel. Pada tampilan awal kita dapat melihat info laporan. Sekarang, mari kita membuka **Market Share**.



Datasets

Dataset adalah kumpulan data yang dapat divisualkan di Power BI. Filterisasi data sebelum digunakan akan memungkinkan Anda untuk fokus pada data yang penting. Sebagai contoh, Anda bisa filter database kontak pada dataset sehingga anda hanya menganalisis beberapa data yang terfokus. Anda dapat membuat visualisasi berdasarkan subset (dataset yang terfilter). Power BI punya peranan penting dengan memiliki banyak konektor data, yang memungkinkan Anda terhubung dengan mudah ke data bahkan memfilternya bila perlu serta memasukkannya ke dataset dengan asal data dari Excel, Microsoft SQL Server, Azure, Oracle, hingga layanan seperti Facebook, Salesforce, maupun MailChimp.

Sekarang, kita akan menggunakan sample yang kita terakhir gunakan. Pilih icon **Data** pada sidebar kiri.



Sales and Marketing Samp... Search Sign in

File Home Help Table tools

Name Date

Structure Mark as date table Calendars Manage relationships Relationships New measure measure column Calculations New table New table

Fields

Search

SalesFact Sentiment Date Geo Manufacturer Product

Date	MonthNo	MonthName	MonthID	Month	Quarter	Year	RunningMonths	Running Year
01/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
02/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
03/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
04/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
05/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
06/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
07/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
08/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
09/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
10/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
11/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
12/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
13/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
14/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
15/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
16/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
17/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
18/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
19/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
20/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
21/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
22/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
23/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
24/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
25/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
26/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
27/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
28/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
29/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
30/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
31/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
01/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
02/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
03/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
04/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
05/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
06/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	

Table: Date (6,209 rows)

Type here to search

Pada data di atas, Anda dapat memilih table apa yang akan ditampilkan pada sidebar yang berada di kanan, dan jika kita menghovernya kita bisa mendapat detail informasi table di atas!

Reports

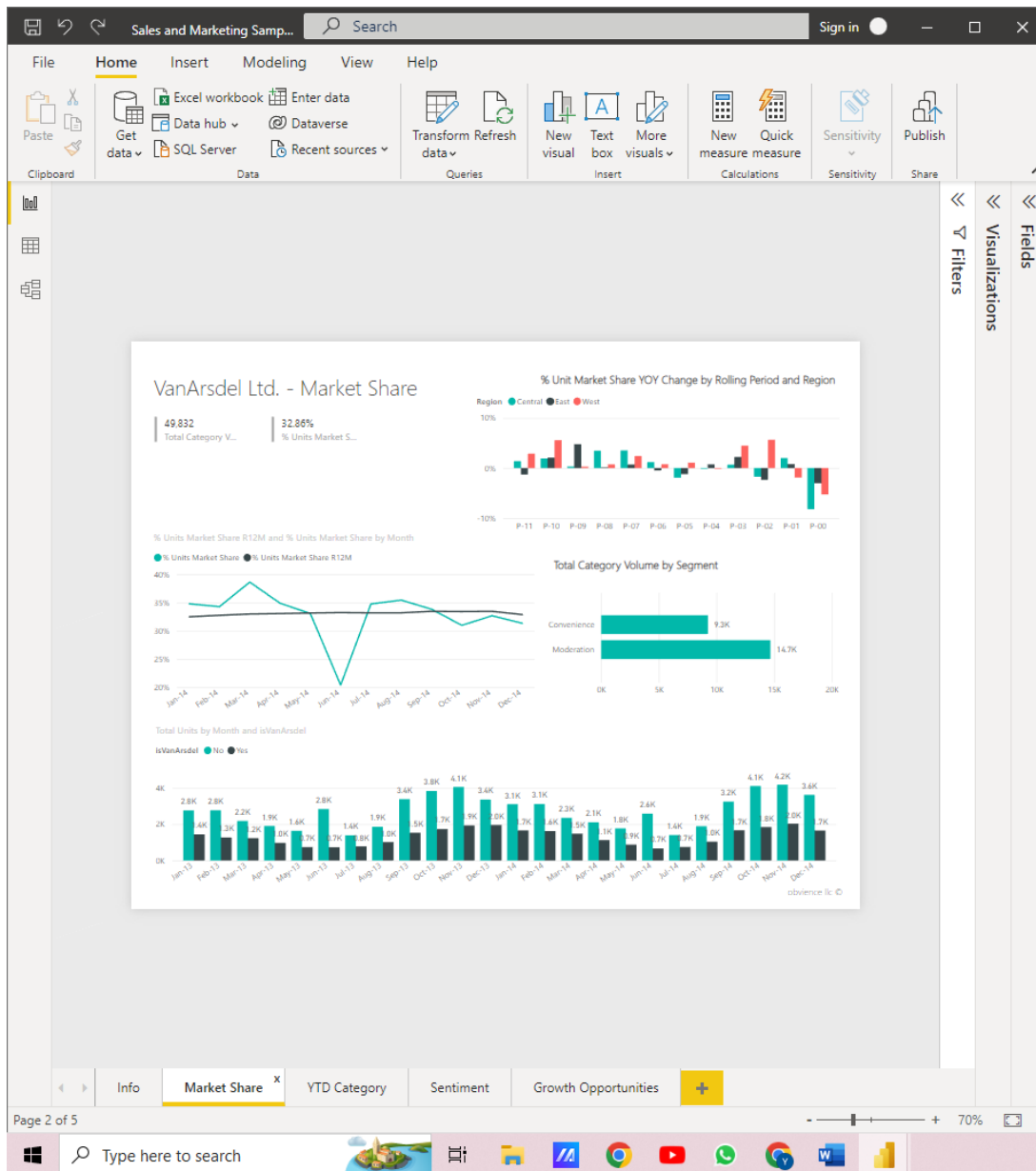
Report menurut Power BI adalah kumpulan visualisasi yang muncul pada satu atau beberapa halaman dan saling terkait. Anda dapat membuat report pada Power BI Service, dan report memungkinkan mengatur visualisasi sesuai dengan cara yang Anda inginkan!

Sekarang, mari kita buka tampilan **Report** pada sidebar kiri

The screenshot shows the Microsoft Power BI Desktop interface. The main window displays a table with the following columns: Date, MonthNo, MonthName, MonthID, Month, Quarter, Year, RunningMonths, and Running Year. The table contains 6,209 rows of data, spanning from July 1999 to July 2000. The right sidebar shows the 'Fields' pane with a search bar and a list of tables: SalesFact, Sentiment, Date (selected), Geo, Manufacturer, and Product. The top ribbon includes 'Table tools' with options like 'Mark as date table', 'Manage relationships', and 'New measure'.

Date	MonthNo	MonthName	MonthID	Month	Quarter	Year	RunningMonths	Running Year
01/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
02/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
03/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
04/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
05/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
06/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
07/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
08/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
09/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
10/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
11/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
12/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
13/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
14/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
15/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
16/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
17/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
18/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
19/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
20/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
21/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
22/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
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24/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
25/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
26/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
27/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
28/07/1999 00:00:00	7	Jul	199907	Jul-99	Q3	1999	186	
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02/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
03/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
04/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
05/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	
06/07/2000 00:00:00	7	Jul	200007	Jul-00	Q3	2000	174	

Table: Date (6,209 rows)



Dashboard and Tiles

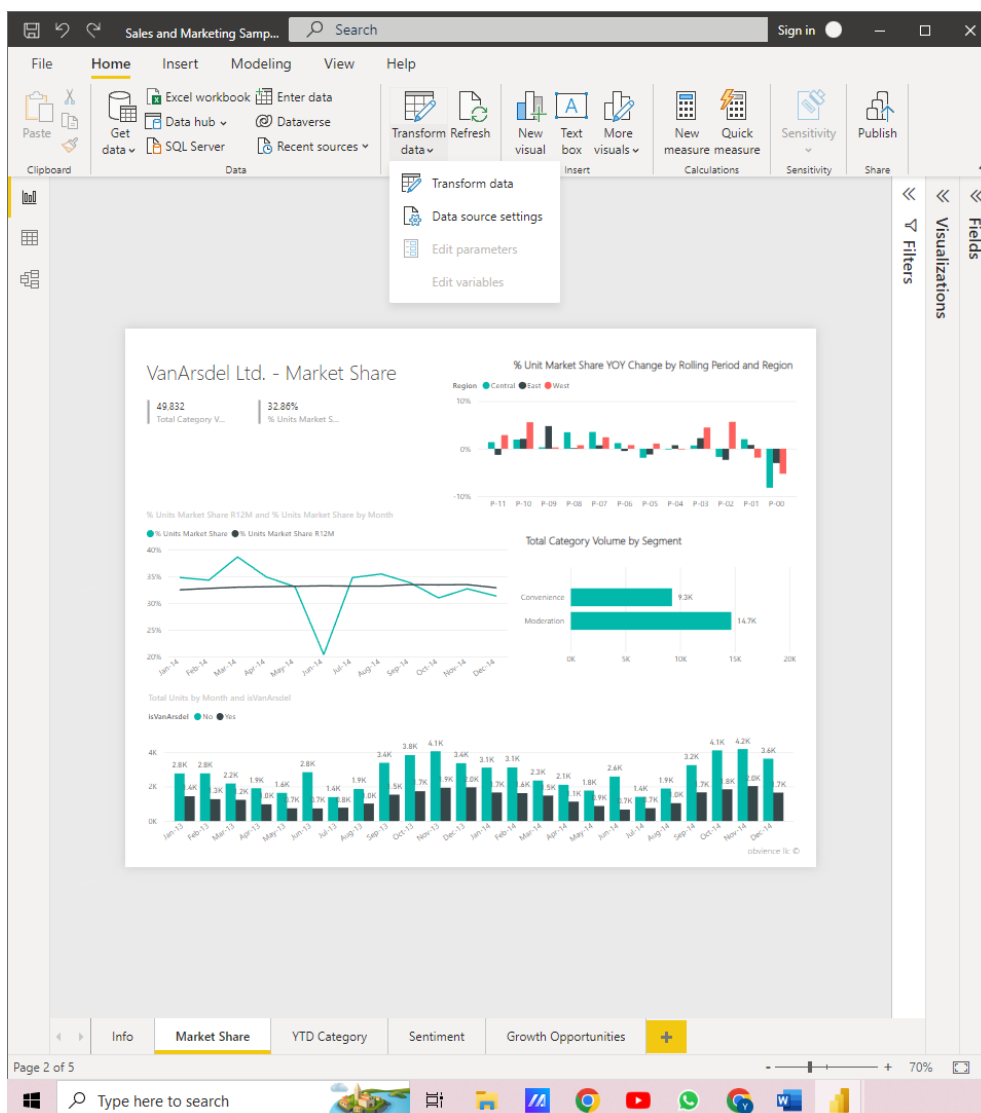
Saat Anda ingin berbagi report, Anda dapat membuat dashboard dimana dapat Anda gunakan untuk berbagi pada orang lain di Power BI, dan juga dapat diakses oleh orang lain yang menggunakan Power BI Service dan juga perangkat seluler mereka. Dashboard dan titles dapat dilihat pada bagian **Reports**.

Load, Clean, and Transform Data in Power BI

Saat membuat visual pada laporan, data yang buruk sangat berpeluang untuk didapat. Lalu Anda memutuskan untuk mulai bekerja dan menentukan cara membuat model data semurni mungkin. Dan Power BI serta Power Query menjadi solusi bagi Anda karena dapat membantu Anda menyelesaikan masalah di atas.

Shape the Initial Data

Power Query Editor pada Power BI Desktop memungkinkan Anda mengolah data ter-import, membersihkan dan membentuk data sebelum Anda dapat memulai membangun laporan. Untuk membentuk data, kita dapat membuka Power Query Editor dan memilih transform data.



Sebagai langkah pertama, bentuk data awal sebagai header identifier dan nama kolom dalam data. Lalu evaluasi lokasi untuk pastikan berada di tempat. Kita dapat gunakan sample **Financial Sample to Clean** untuk bereksperimen. Kita dapat koneksikan file excelnya dahulu dan klik **Get Data** pada **Home**, kemudian pilih **Excel Workbook**.

The screenshot shows the Microsoft Power BI Desktop application. The 'Home' tab is active in the ribbon, and the 'Get Data' button is highlighted. A dropdown menu is open, showing 'Excel workbook' as the selected option. The background dashboard, titled 'Market Share', contains several visualizations:

- % Unit Market Share YOY Change by Rolling Period and Region:** A bar chart showing percentage changes across rolling periods (P-11 to P-00) for three regions: Central (green), East (blue), and West (red).
- Total Category Volume by Segment:** A horizontal bar chart comparing 'Convenience' (9.3K) and 'Moderation' (14.7K) segments.
- Total Units by Month and isVanArsdel:** A grouped bar chart showing units for 'isVanArsdel' (Yes/No) across months from Jan-13 to Dec-14. Data values are labeled on top of the bars, ranging from 0.4K to 4.2K.

The bottom status bar indicates 'Page 2 of 5' and a zoom level of 70%.

Navigator

Display Options ▾

Financial Sample To Clean.xlsx [2]

Table_1

to clean

to clean

to clean

Column1	Column2	Column3	Column4	Col
	null	null	null	null
Segment	Country	Product	Discount Band	
	null	null	null	null
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

Promote Headers

Pada tabel to clean, pilih **Use First Row as Header** untuk membuat baris pertama sebagai header. Kemudian save dan apply. Lakukan hal ini dua kali untuk mendapatkan header yang sesuai.

Sales and Marketing Sample PBIX - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Manage Columns Reduce Rows Split Column

Queries [7]

Product SalesFact Date Geo Sentiment Manufacturer to clean

Test Column2

1	Segment	Country
2	Government	Canada
3	Government	Germany
4	Midmarket	France
5	Midmarket	Germany
6	Midmarket	Mexico
7	Government	Germany
8	Midmarket	Germany
9	Channel Partners	Canada
10	Government	France
11	Channel Partners	Germany
12	Midmarket	Mexico
13	Enterprise	Canada
14	Small Business	Mexico
15	Government	Germany
16	Midmarket	United States of
17	Government	Canada
18	Midmarket	Mexico
19	Channel Partners	Canada
20	Government	Germany
21	Channel Partners	Germany
22	Government	Mexico
23	Midmarket	Mexico
24	Government	United States of
25	Government	Canada
26	Government	Germany
27	Government	Mexico
28	Government	Mexico
29	Government	Mexico
30		

Query Settings

PROPERTIES

Name

to clean

APPLIED STEPS

Source Navigation Changed Type

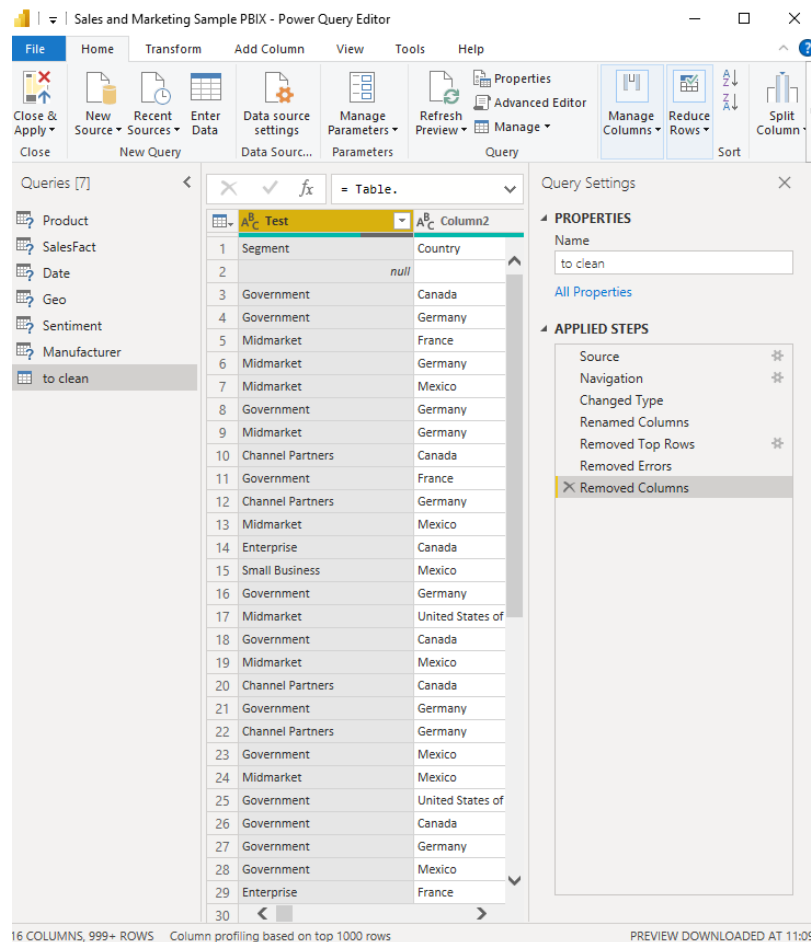
Renamed Columns

17 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 11:09

Rename Columns or Rows

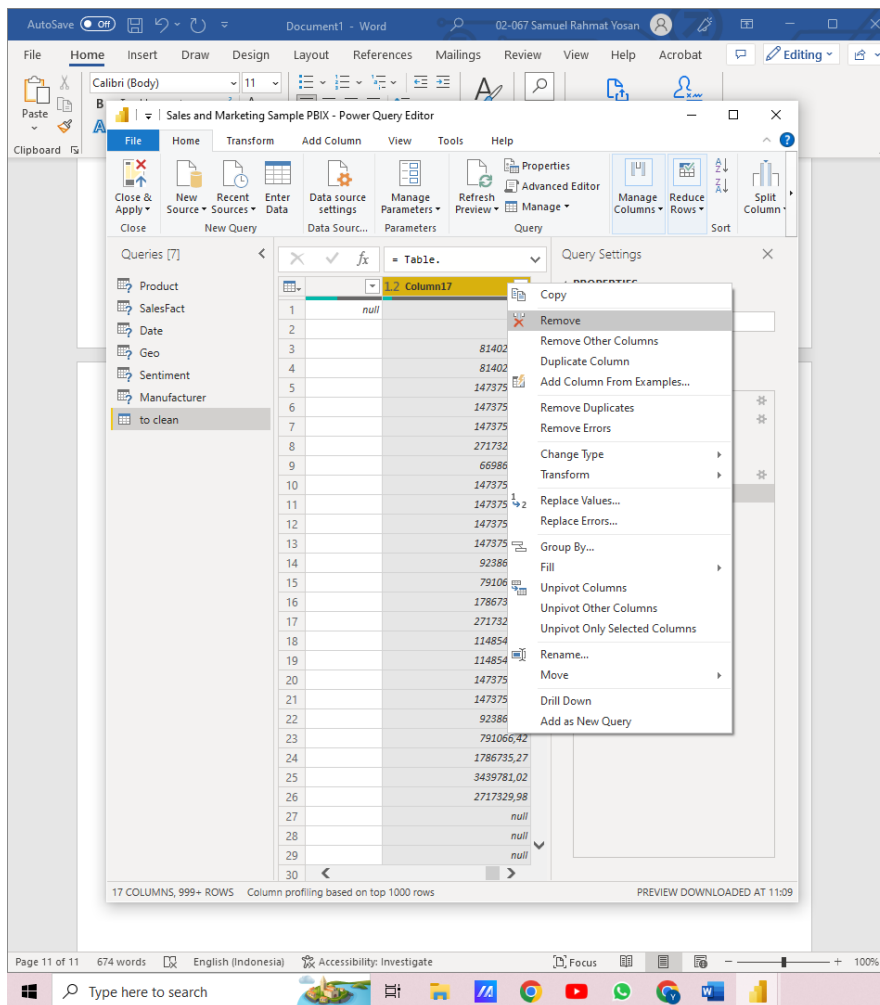
Hapus terlebih dahulu baris pertama karena datanya yang tidak penting lewat **Remove Rows** lalu **Remove Top Rows** dan isi jumlah kolom sebesar satu untuk hapus kolom pertama saja.



The screenshot displays the Power Query Editor window for a file named "Sales and Marketing Sample PBIX - Power Query Editor". The ribbon at the top includes tabs for File, Home, Transform, Add Column, View, Tools, and Help. The "Transform" tab is active, showing options like "Remove Columns", "Remove Rows", and "Sort". The "Remove Columns" button is highlighted. The main area shows a table with 16 columns and 999+ rows. The first column is labeled "Segment" and the second is "Country". The "Query Settings" pane on the right shows the "APPLIED STEPS" list, which includes "Source", "Navigation", "Changed Type", "Renamed Columns", "Removed Top Rows", "Removed Errors", and "Removed Columns". The "Removed Columns" step is selected, indicating that the first column has been removed.

Segment	Country
Government	Canada
Government	Germany
Midmarket	France
Midmarket	Germany
Midmarket	Mexico
Government	Germany
Midmarket	Germany
Channel Partners	Canada
Government	France
Channel Partners	Germany
Midmarket	Mexico
Enterprise	Canada
Small Business	Mexico
Government	Germany
Midmarket	United States of
Government	Canada
Midmarket	Mexico
Channel Partners	Canada
Government	Germany
Channel Partners	Germany
Government	Mexico
Midmarket	Mexico
Government	United States of
Government	Canada
Government	Germany
Government	Mexico
Enterprise	France

Hapus **column17** dengan pilih kolom dan kemudian **Remove Column**. Jangan lupa Close and Safe



Pivot Columns

Hapus semua kolom selain **Segment**, **Country**, dan **Sales** dengan memilih kolom tersebut dan klik **Remove Columns**. Setelah itu, pilih **Country** dan pada tab **Transform** klik **Pivot Column**.

AutoSave Off Document1 - Word 02-067 Samuel Rahmat Yosan

File Home Insert Draw Design Layout References Mailings Review View Help Acrobat Editing

Clipboard Paste

Sales and Marketing Sample PBIX - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Properties Manage

Queries [7]

- Product
- SalesFact
- Date
- Geo
- Sentiment
- Manufacturer
- to clean

Table.

	A ^B Test	A ^B Column2
1	Segment	Country
2		null
3	Government	Canada
4	Government	Germany
5	Midmarket	France
6	Midmarket	Germany
7	Midmarket	Mexico
8	Government	Germany
9	Midmarket	Germany
10	Channel Partners	Canada
11	Government	France
12	Channel Partners	Germany
13	Midmarket	Mexico
14	Enterprise	Canada
15	Small Business	Mexico
16	Government	Germany
17	Midmarket	United States of
18	Government	Canada
19	Midmarket	Mexico
20	Channel Partners	Canada
21	Government	Germany
22	Channel Partners	Germany
23	Government	Mexico
24	Midmarket	Mexico
25	Government	United States of
26	Government	Canada
27	Government	Germany
28	Government	Mexico
29	Enterprise	France
30		

Query Settings

PROPERTIES

Name

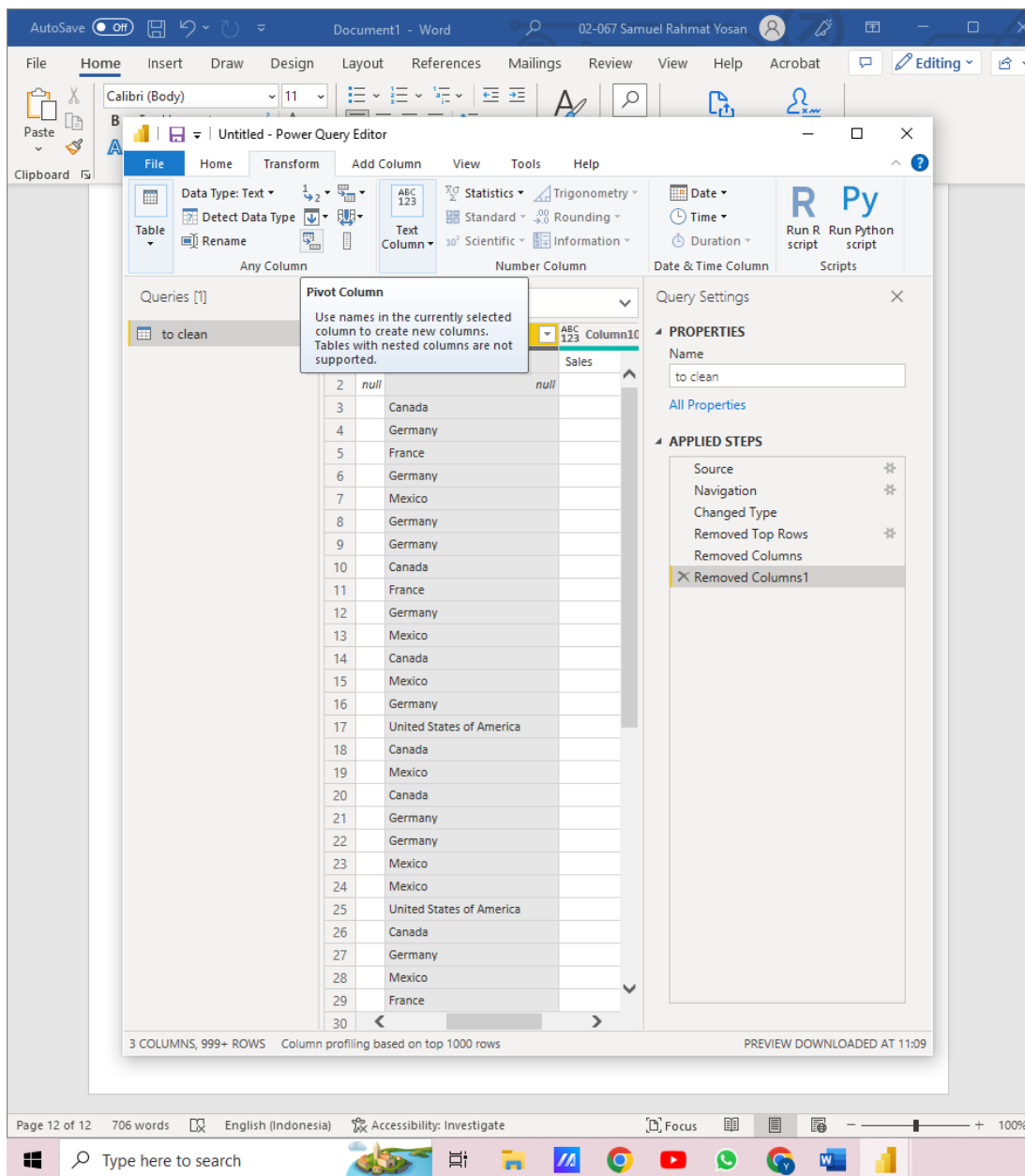
to clean

All Properties

APPLIED STEPS

- Source
- Navigation
- Changed Type
- Renamed Columns
- Removed Top Rows
- Removed Errors
- Removed Columns

16 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 11:09



Pivot Column

Use the names in column "Country" to create new columns.

Values Column ①

Sales

Advanced options

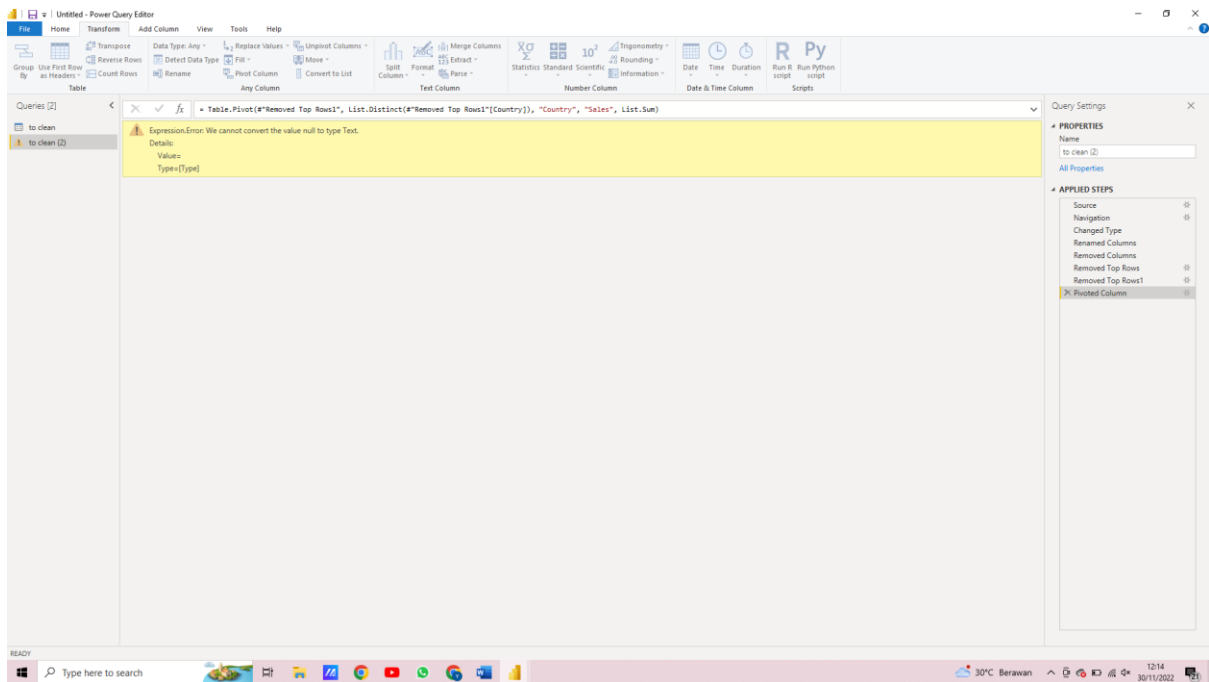
Aggregate Value Function

Sum

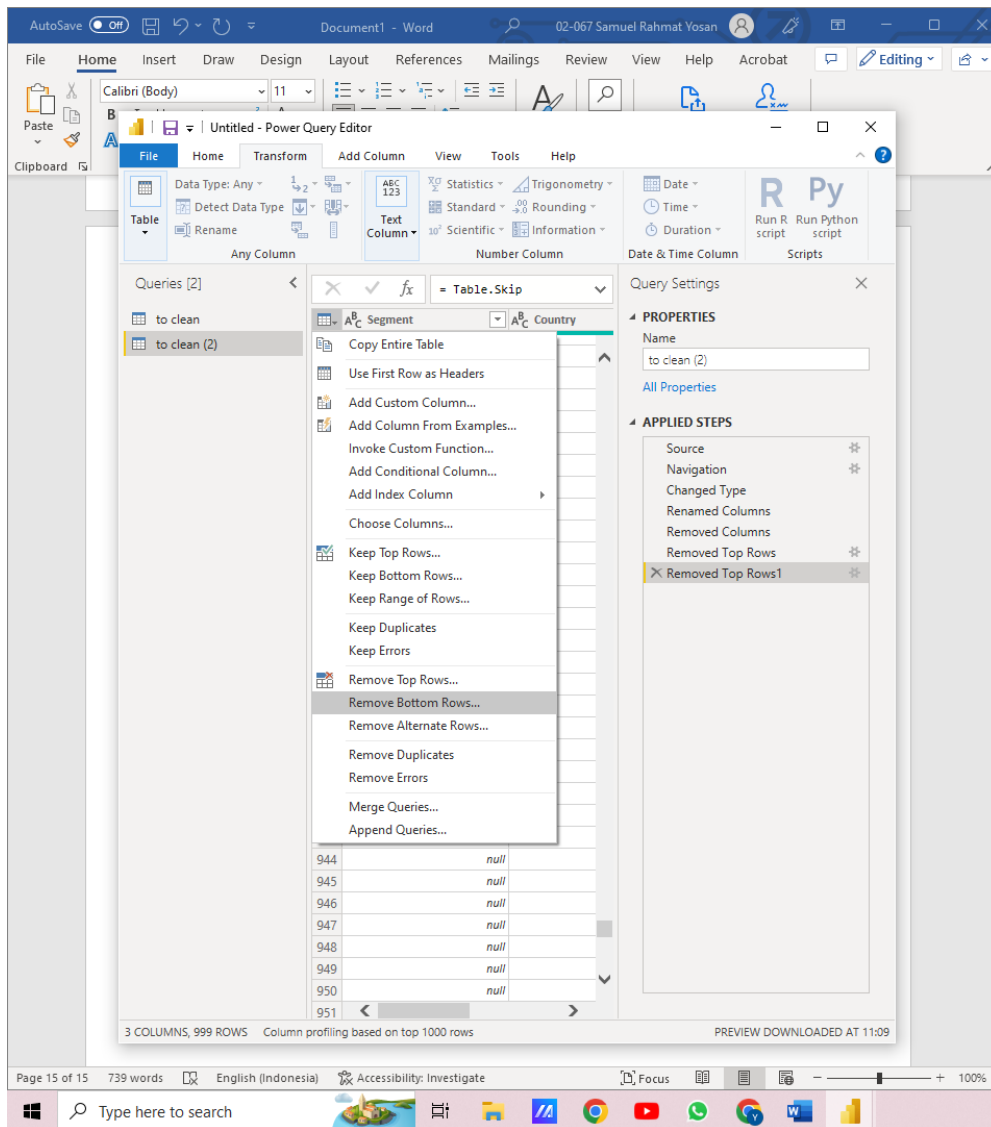
[Learn more about Pivot Column](#)

OK

Cancel



Dan kita mendapat error. Oleh sebab itu, mari kita hapus baris 700 ke atas karena memiliki nilai null yang mencegah pivot column



Remove Button Rows

Remove Bottom Rows

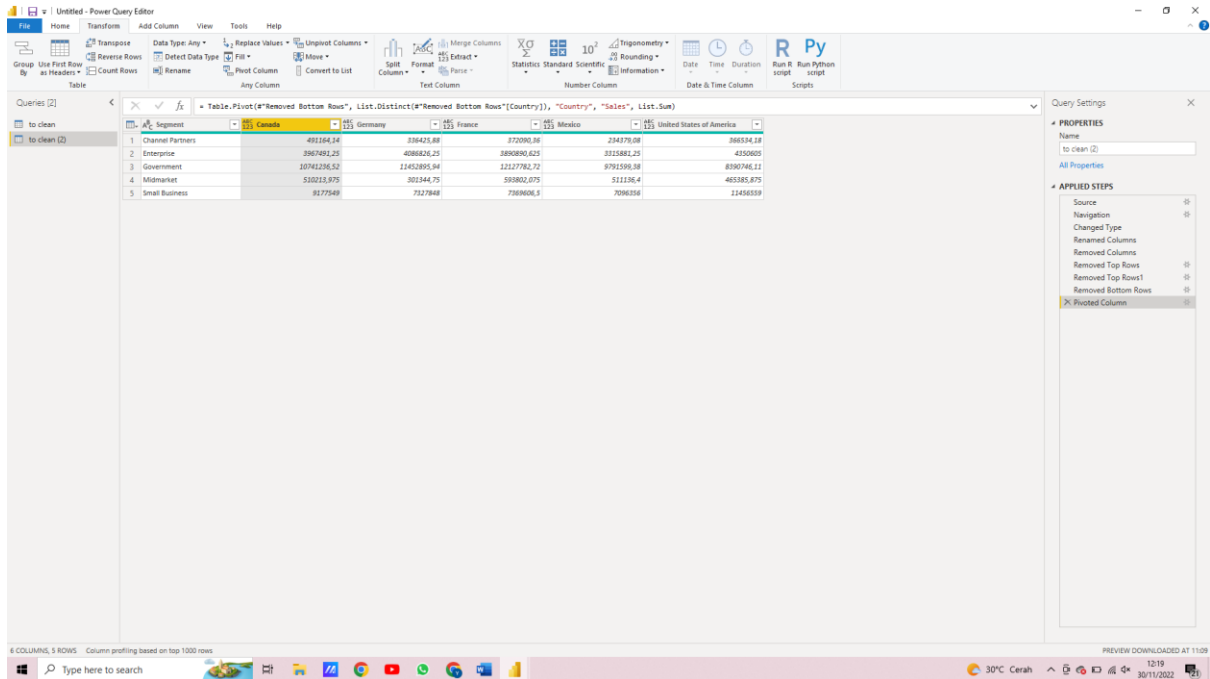
Specify how many rows to remove from the bottom.

Number of rows

OK

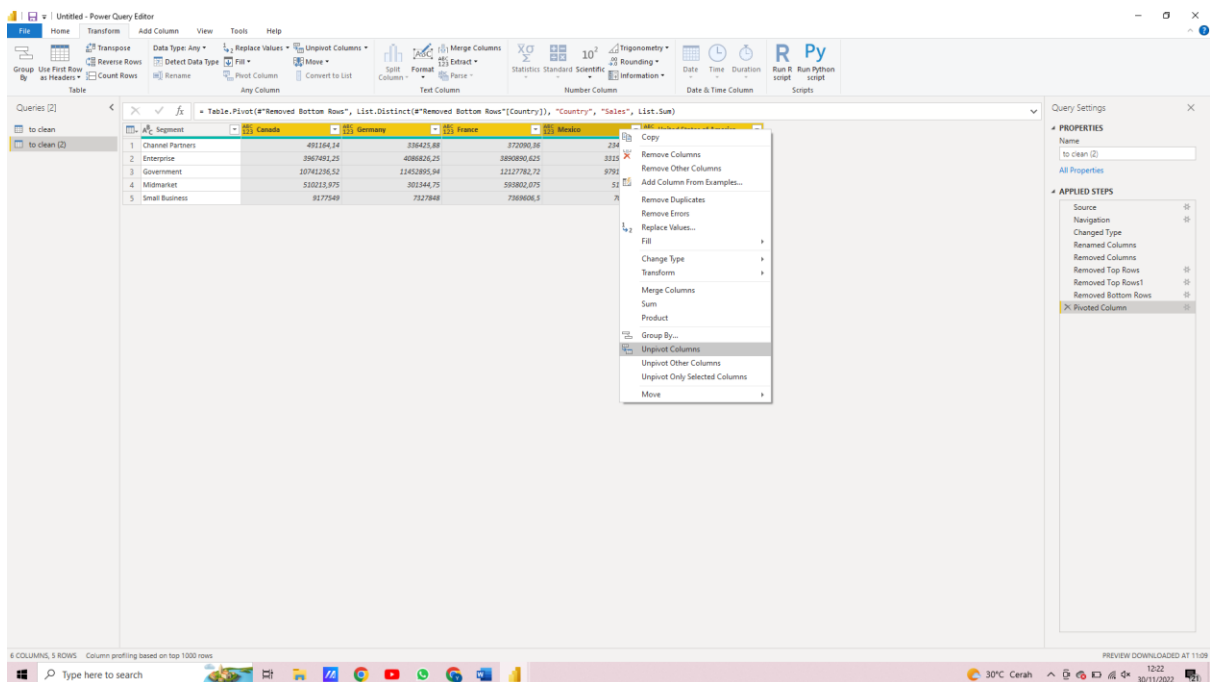
Cancel

Dan hasilnya...



Unpivot Columns

Untuk unpiv columns, kita bisa dengan mengklik tabel tiap negara dengan **Ctrl+K** per tiap negara, dan setelah itu klik kanan dan klik **Unpivot Columns**.



Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Group By Use First Row as Headers Count Rows

Table

Queries [2]

to clean

to clean (2)

Table.UnpivotOtherColumns("Pivoted Column", ("Segment"), "Attribute", "Value")

	Segment	Attribute	Value
1	Channel Partners	Canada	491264.14
2	Channel Partners	Germany	336425.88
3	Channel Partners	France	372090.36
4	Channel Partners	Mexico	294579.06
5	Channel Partners	United States of America	366534.18
6	Enterprise	Canada	3967491.25
7	Enterprise	Germany	4086826.25
8	Enterprise	France	3890890.625
9	Enterprise	Mexico	3125881.25
10	Enterprise	United States of America	4359095
11	Government	Canada	10742236.52
12	Government	Germany	11452895.94
13	Government	France	12127782.72
14	Government	Mexico	9791399.38
15	Government	United States of America	8396746.11
16	Midmarket	Canada	510221.975
17	Midmarket	Germany	302344.75
18	Midmarket	France	393802.075
19	Midmarket	Mexico	311136.4
20	Midmarket	United States of America	465585.975
21	Small Business	Canada	9177549
22	Small Business	Germany	7527848
23	Small Business	France	7369606.5
24	Small Business	Mexico	7096356
25	Small Business	United States of America	11456559

3 COLUMNS, 25 ROWS Column profiling based on top 1000 rows

Query Settings

PROPERTIES

Name

to clean (2)

APPLIED STEPS

Source

Navigation

Changed Type

Removed Columns

Removed Top Rows

Removed Top Rows1

Removed Bottom Rows

Pivoted Column

Unpivoted Columns

30°C Cerah 12:24 30/11/2022

Simplify Data Structure : Remove Duplicates

Pada kolom **Attribute**, klik kanan pada header kolom dan **remove duplicates**.

Power Query Editor interface showing a table with 25 rows and 3 columns. The table is titled "Table.UnpivotOtherColumns('Pivoted Column', ('Segment'), 'Attribute', 'Value')". The data is grouped by Segment (Channel Partners, Enterprise, Government, Midmarket, Small Business) and Attribute (Canada, Germany, France, Mexico, United States of America). The Value column contains numerical data.

Query Settings: Name: to clean (2)

APPLIED STEPS: Source, Navigation, Changed Type, Renamed Columns, Removed Columns, Removed Top Rows, Removed Top Rows1, Removed Bottom Rows, Pivoted Column, Unpivoted Columns

OneDrive notification: Screenshot saved. The screenshot was added to your OneDrive.

Power Query Editor interface showing the same table with 25 rows and 3 columns. The table is titled "Table.UnpivotOtherColumns('Pivoted Column', ('Segment'), 'Attribute', 'Value')". The data is grouped by Segment (Channel Partners, Enterprise, Government, Midmarket, Small Business) and Attribute (Canada, Germany, France, Mexico, United States of America). The Value column contains numerical data.

Query Settings: Name: to clean (2)

APPLIED STEPS: Source, Navigation, Changed Type, Renamed Columns, Removed Columns, Removed Top Rows, Removed Top Rows1, Removed Bottom Rows, Pivoted Column, Unpivoted Columns

