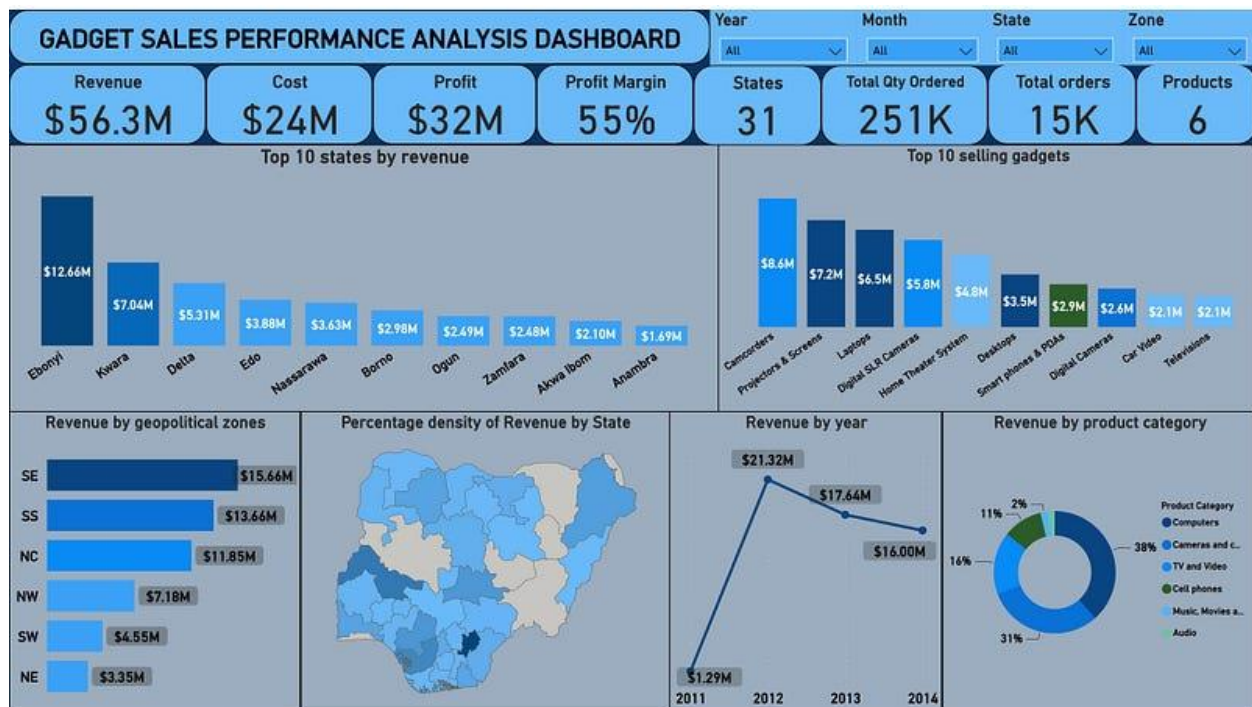


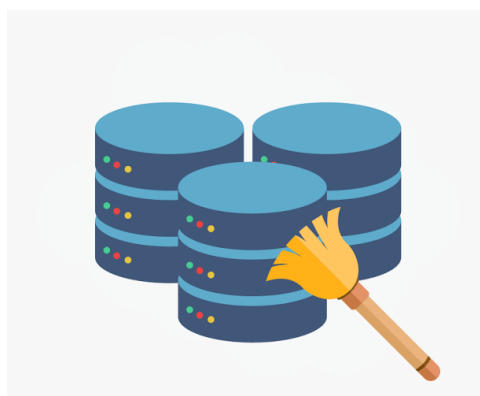
Data analysis: wrangling, cleaning, analysis and visualization of gadget stores' sales performance data using power query and power BI



Gadget sales analysis dashboard

Background

The term "**data cleaning**" simply means making data more accurate for analysis. It entails identifying data errors and then correcting them by changing, updating, or removing data. The opposite of clean data is dirty data. Dirty data is data that is incomplete, incorrect, or irrelevant to the problem you are trying to solve. Various kinds of dirty data may include duplicate data (*which may skew or inflate the analysis*), outdated data, incomplete data (*missing several important fields*), inaccurate data, or even inconsistent data (*which may contain different formats in the same field, especially the **date format***). To be considered clean, data must be **complete**, **consistent** (*all columns must have the correct data type and format*), and **accurate**.



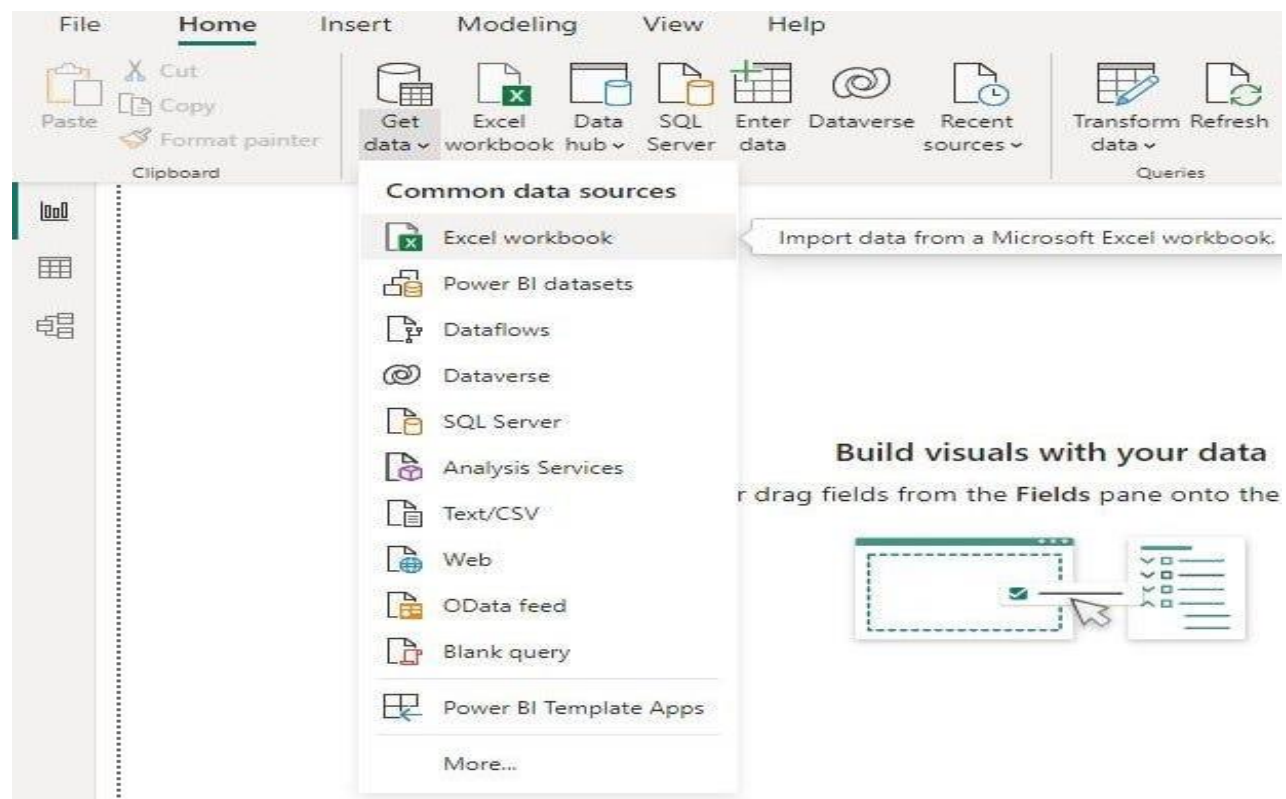
Data wrangling, on the other hand, is simply transforming data from one “raw” data form into another format with the intent of making it more *accessible and easier to analyze*. During this process, the simple **ETL** (*Extract, Transform, Load*) method was used to extract the data from a CSV format (comma-separated value), transform it from the Navigator field into the power query in order to clean the data, and then finally load it into power BI to visualize.

About the dataset

The dataset contains details about gadget stores under the same company located in 31 states in Nigeria, including the Federal Capital Territory, and the sales performance of each individual store from 2011–2014 in terms of the gadgets (products and their subcategories) sold during that time. The dataset initially had 15000 rows and 12 columns, but during the analysis, a few more columns were added to contain calculations that were relevant to the analysis. The dataset can be obtained [here](#).

Data cleaning steps:

The dataset was imported into the navigator field and transformed into the power query, where the cleaning was done.



Navigator

Display Options

- 4_5967305163084400968.xlsx [2]
 - Table_1
 - Sales_Details

Table_1

Preview downloaded on Friday, March 10, 2023

Order ID	Order Date	Unit Cost	Unit Price	Order Qty	Channel
7077	3/18/2013	76.09496775	304	9	Store
117	2/23/2012	7.491752798	12.99	8	Store
7018	1/11/2012	10.12233768	159.99	9	Store
140	2/13/2014	0.576153263	25.69	18	Store
491	1/17/2013	108.5087768	304	9	Online
58	4/6/2014	77.98502883	299	24	Online
7085	8/27/2014	154.987254	699	10	Online
929	9/15/2012	96.4548497	178	5	Online
1527	12/29/2012	227.3970926	310	13	Online
7264	7/21/2013	158.6528393	299	30	Online
1471	2/24/2012	346.6271251	763.51	18	Online
845	6/17/2013	192.8419767	588	24	Online
7144	6/16/2013	50.30309548	95.95	24	Online
1160	8/22/2012	181.8228396	299.23	10	Online
619	6/19/2013	144.2994725	299.23	12	Online
625	7/13/2014	13.04327298	159	20	Online
523	11/17/2014	79.63851975	199.95	26	Online
879	6/8/2014	162.9056774	296	6	Online
7409	6/6/2013	153.0782218	296	12	Online
1170	9/4/2014	108.2420856	156	20	Online
1154	12/7/2013	63.08704151	159.99	26	Online
1572	1/19/2014	268.4218818	369	9	Online

Load Transform Data Cancel

Upon transforming into the power query editor, it was observed that the dataset was dirty and needed to be cleaned before loading into power BI. *Don't worry, stick with me, and I'll show you every step taken to transform this dirty data into a more appealing dataset.*

Notice how the data type of every column is a string and a numerical (ABC123); each column needed to be changed into the right data type.

Queries [1]

Table_1

Source[Table_1,Kind=Table][Data]

ABC 123	ABC 123	ABC 123	ABC 123	ABC 123	ABC 123
Order ID	Order Date	Unit Cost	Unit Price	Order Qty	Channel
1 7077	3/18/2013	76.09496775	304	9	Store
2 117	2/23/2012	7.491752798	12.99	8	Store
3 7018	1/11/2012	10.12233768	159.99	9	Store
4 140	2/13/2014	0.576153263	25.69	18	Store
5 491	1/17/2013	108.5087768	304	9	Online
6 58	4/6/2014	77.98502883	299	24	Online
7 7085	8/27/2014	154.987254	699	10	Online
8 929	9/15/2012	96.4548497	178	5	Online
9 1527	12/29/2012	227.3970926	310	13	Online
10 7264	7/21/2013	158.6528393	299	30	Online
11 1471	2/24/2012	346.6271251	763.51	18	Online
12 845	6/17/2013	192.8419767	588	24	Online
13 7144	6/16/2013	50.30309548	95.95	24	Online
14 1160	8/22/2012	181.8228396	299.23	10	Online
15 619	6/19/2013	144.2994725	299.23	12	Online
16 625	7/13/2014	13.04327298	159	20	Online
17 523	11/17/2014	79.63851975	199.95	26	Online
18 879	6/8/2014	162.9056774	296	6	Online
19 7409	6/6/2013	153.0782218	296	12	Online
20 1170	9/4/2014	108.2420856	156	20	Online
21 1154	12/7/2013	63.08704151	159.99	26	Online
22 1572	1/19/2014	268.4218818	369	9	Online
23 7548	1/29/2013	6.32265692	40.55	18	Online

Each column's data type was changed to the right data type to make it more consistent.

Queries [1]

Table_1

Source([Items="Table_1",Kind="Table"])[Data]

ABC 123	Order ID	Unit Cost	Unit Price	ABC 123	Order Qty	ABC 123	Channel
1	7077	76.09496775			304	9	Store
2	117	7.491752798	12.99			8	Store
3	7018	10.12233768	159.99			9	Store
4	140	0.576153263	25.69			18	Store
5	491	108.5087768	304			9	Online
6	58	77.98502883	299			24	Online
7	7085	154.987254	699			10	Online
8	929		178			5	Online
9	1527		310			13	Online
10	7264		299			30	Online
11	1471		763.51			18	Online
12	845		588			24	Online
13	7144		95.95			24	Online
14	1160		299.23			10	Online
15	619		299.23			12	Online
16	625		159			20	Online
17	523		199.95			26	Online
18	879		296			6	Online
19	7409		296			12	Online
20	1170		156			20	Online
21	1154		159.99			26	Online
22	1572		369			9	Online
23	7548		40.55			18	Online
24	7055					18	Online

The dataset was then checked for **duplicates**, which were removed to avoid a skewed or inflated analysis.

123	Order ID	Order Date	1.2	Unit Cost	1.2	Unit Price	123	Order Qty	ABC	Channel
Copy Entire Table		3/18/2013		76.09		304		9	Store	
Use First Row as Headers		2/23/2012		7.49		12.99		8	Store	
Add Custom Column...		1/11/2012		10.12		159.99		9	Store	
Add Column From Examples...		2/13/2014		0.58		25.69		18	Store	
Invoke Custom Function...		1/17/2013		108.51		304		9	Online	
Add Conditional Column...		4/6/2014		77.99		299		24	Online	
Add Index Column		8/27/2014		154.99		699		10	Online	
Choose Columns...		9/15/2012		96.45		178		5	Online	
Keep Top Rows...		12/29/2012		227.4		310		13	Online	
Keep Bottom Rows...		7/21/2013		158.65		299		30	Online	
Keep Range of Rows...		2/24/2012		346.63		763.51		18	Online	
Keep Duplicates		6/17/2013		192.84		588		24	Online	
Keep Errors		6/16/2013		50.3		95.95		24	Online	
Remove Top Rows...		8/22/2012		181.82		299.23		10	Online	
Remove Bottom Rows...		6/19/2013		144.3		299.23		12	Online	
Remove Alternate Rows...		7/13/2014		13.04		159		20	Online	
Remove Duplicates		11/17/2014		79.64		199.95		26	Online	
Remove Errors		6/8/2014		162.91		296		6	Online	
Merge Queries...		6/6/2013		153.08		296		12	Online	
Append Queries...		9/4/2014		108.24		156		20	Online	
		12/7/2013		63.09		159.99		26	Online	
		1/19/2014		268.42		369		9	Online	
		1/29/2013		6.32		40.55		18	Online	
		6/14/2013		156.30		299		18	Online	

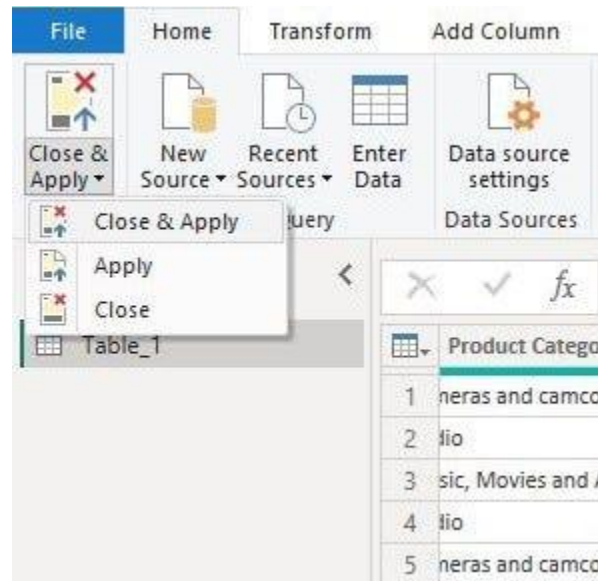
Next, the unit cost had a few more decimals than needed, so for accurate calculations and better visualization, the unit cost was rounded to two decimal places.

	Order Date	1.2 Unit Cost		er Qty	A ^B Channel	A ^B Promotion Name
1	3/18/2013	76.05		9	Store	New Year Promotion
2	2/23/2012	7.491		8	Store	New Year Promotion
3	1/11/2012	10.12		9	Store	New Year Promotion
4	2/13/2014	0.576		18	Store	Deeper Promotion
5	1/17/2013	108.5		9	Online	Hammartan Promotion
6	4/6/2014	77.98		24	Online	Easter Promotion
7	8/27/2014	154.		10	Online	No Discount
8	9/15/2012	96.4		5	Online	No Discount
9	12/29/2012	227.5				Xmas Holiday Promotion
10	7/21/2013	158.6				count
11	2/24/2012	346.6				artan Promotion
12	6/17/2013	192.8				count
13	6/16/2013	50.30				No Discount
14	8/22/2012	181.8				No Discount
15	6/19/2013	144.2				No Discount
16	7/13/2014	13.04				No Discount
17	11/17/2014	79.65				Xmas Holiday Promotion
18	6/8/2014	162.5		6	Online	No Discount
19	6/6/2013	153.0		12	Online	No Discount
20	9/4/2014	108.2		20	Online	No Discount
21	12/7/2013	63.08		26	Online	Xmas Holiday Promotion
22	1/19/2014	268.4		9	Online	Hammartan Promotion
23	1/29/2013	6.32255692		18	Online	Hammartan Promotion
24						No Discount

The *order date* column was checked by clicking the dropdown icon to filter any inconsistencies in the date format. After investigating, it was found that the date formats were all in unison with the format: ‘mm/dd/yyyy’.

1 ² 3	Order ID	Order Date	1.2 Unit Cost
Sort Ascending			
Sort Descending			
Clear Sort			
Clear Filter			
Remove Empty			
Date Filters			
Search			
(Select All)			
12/6/2011			
12/8/2011			
12/9/2011			
12/10/2011			
12/11/2011			
12/12/2011			
12/13/2011			
12/16/2011			
12/17/2011			
12/19/2011			
12/20/2011			
12/21/2011			
List may be incomplete.			
Load more			
OK			
Cancel			

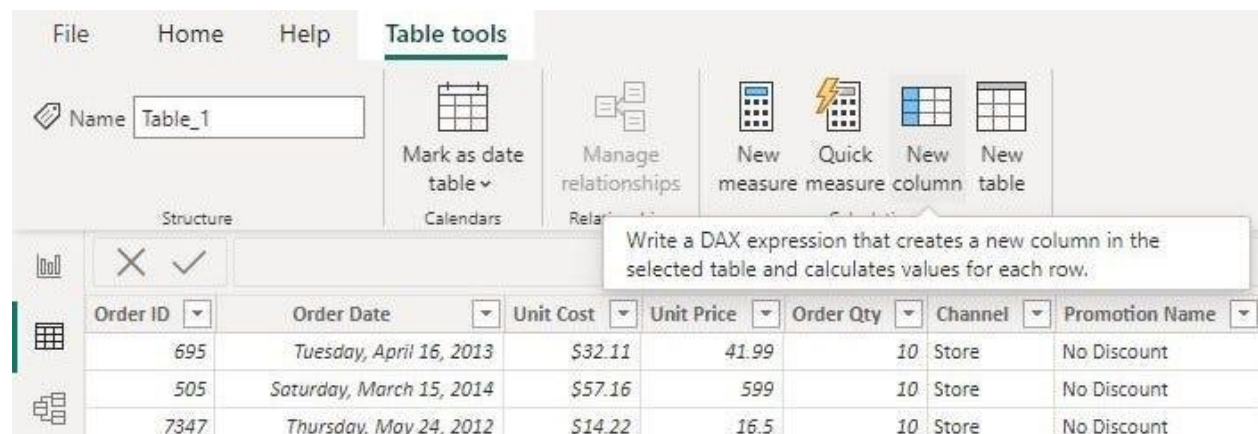
Finally, once I was satisfied that the data was clean and ready for visualization, I loaded the dataset into power BI by applying all of the cleaning steps to it by clicking 'close and apply'.



Once inside the power BI platform, I visualized a few insights by comparing different columns from my dataset in order to build a dashboard, analyzing the sales performance of different stores in different states in Nigeria.

In order to provide a more accurate analysis of the sales performances of these stores, I created three new columns and performed some mathematical calculations to show the revenue, gross profit, and gross profit margin generated from different stores in various states.

I created these columns by clicking on the data field and then clicking 'New column'. Calculating the revenue, gross profit, and gross profit margin was possible using DAX (*data analysis expressions*) to input the formulas.



Next, click 'New column' to add a new column for the revenue calculations.

For revenue, input the formula:

$$\text{Revenue} = \text{Table_1}[\text{Unit Price}] * \text{Table_1}[\text{Order Qty}]$$

A new column was created automatically, calculating the revenue by multiplying the *unit price* by the *order quantity* for each row and filling up the new column. The format for the revenue column was changed to *currency*.

Price	Order Qty	Channel	Promotion Name	Product Name	Product Sub Category	Product Category	State	Zone	Revenue	Gross Profit
41.99	10	Store	No Discount	SV PCI Network Adapter E904 Silver	Computers Accessories	Computers	Edo	South South	\$419.9	
599	10	Store	No Discount	Simpson Laptop15 M1601 Blue	Laptops	Computers	Edo	South South	\$5,990	
16.5	10	Store	No Discount	Kekule Notebook Peripheral Kit M69 White	Computers Accessories	Computers	Edo	South South	\$165	
382.95	10	Store	No Discount	Fabrikam Laptop12 M2001 Silver	Laptops	Computers	Edo	South South	\$3,829.5	
456.9	10	Store	No Discount	Fabrikam Laptop14.1W M4180 Red	Laptops	Computers	Edo	South South	\$4,569	
2499	10	Store	No Discount	Proseware Projector 1080p DLP86 Black	Projectors & Screens	Computers	Edo	South South	\$24,990	
758	10	Store	No Discount	Proseware Laptop15.4W M518 Black	Laptops	Computers	Edo	South South	\$7,580	
758	10	Store	No Discount	Proseware Laptop15.4W M518 White	Laptops	Computers	Edo	South South	\$7,580	
129	10	Store	No Discount	Simpson LCD17W E203 White	Monitors	Computers	Edo	South South	\$1,290	
229	10	Store	No Discount	Kekule Projector 480p M480 Black	Projectors & Screens	Computers	Edo	South South	\$2,290	
41.99	10	Store	No Discount	SV PCI Network Adapter E903 Silver	Computers Accessories	Computers	Edo	South South	\$419.9	
15.9	10	Store	No Discount	Kekule USB Wave Multi-media Keyboard E280 Black	Computers Accessories	Computers	Edo	South South	\$159	
699	10	Store	No Discount	Simpson Laptop15 M1501 Silver	Laptops	Computers	Edo	South South	\$6,990	
23.9	10	Store	No Discount	Kekule Digital camera accessory kit M200 Grey	Computers Accessories	Computers	Edo	South South	\$239	
2295	10	Store	No Discount	Proseware Projector 1080p LCD65 Black	Projectors & Screens	Computers	Edo	South South	\$22,950	
699	10	Store	No Discount	Fabrikam Laptop15 M5000 White	Laptops	Computers	Edo	South South	\$6,990	
251	10	Store	No Discount	WWI Screen 106in M1609 White	Projectors & Screens	Computers	Edo	South South	\$2,510	
699	10	Store	No Discount	Proseware Laptop15 M510 Black	Laptops	Computers	Edo	South South	\$6,990	
2295	10	Store	No Discount	Kekule Projector 1080p X980 Black	Projectors & Screens	Computers	Edo	South South	\$22,950	
9.5	10	Store	No Discount	Kekule Power Inverter - DC to AC power inverter E900 Black	Computers Accessories	Computers	Edo	South South	\$95	
819	10	Store	No Discount	WWI LCD24 X300 Black	Monitors	Computers	Edo	South South	\$8,190	
382.95	10	Store	No Discount	Simpson Laptop12 M1201 Blue	Laptops	Computers	Edo	South South	\$3,829.5	
219	10	Store	No Discount	Proseware Laser Jet All in one X300 White	Printers, Scanners & Fax	Computers	Edo	South South	\$2,190	

This step was repeated for the gross profit column, by using the formula:

$$\text{Gross profit} = (\text{Table_1}[\text{Unit Price}] - \text{Table_1}[\text{Unit Cost}]) * \text{Table_1}[\text{Order Qty}]$$

The format for the gross profit was changed to *currency*.

File Home Help Table tools Column tools

Name: Gross profit Format: Currency Summarization: Sum Data type: Decimal number Data category: Uncategorized

Structure: Formatting: Properties: Sort by column: Sort Data groups: Groups Manage relationships: Relationships New column: Calculations

1 Gross profit = (Table_1[Unit Price] - Table_1[Unit Cost]) * Table_1[Order Qty]

Qty	Channel	Promotion Name	Product Name	Product Sub Category	Product Category	State	Zone	Revenue	Gross profit
10	Store	No Discount	SV PCI Network Adapter E904 Silver	Computers Accessories	Computers	Edo	South South	\$419.9	\$98.80
10	Store	No Discount	Simpson Laptop16 M1601 Blue	Laptops	Computers	Edo	South South	\$5,990	\$5,418.40
10	Store	No Discount	Kekule Notebook Peripheral Kit M69 White	Computers Accessories	Computers	Edo	South South	\$165	\$22.80
10	Store	No Discount	Fabrikam Laptop12 M2001 Silver	Laptops	Computers	Edo	South South	\$3,829.5	\$2,337.80
10	Store	No Discount	Fabrikam Laptop14.1W M4180 Red	Laptops	Computers	Edo	South South	\$4,569	\$1,735.50
10	Store	No Discount	Proseware Projector 1080p DLP86 Black	Projectors & Screens	Computers	Edo	South South	\$24,990	\$10,745.40
10	Store	No Discount	Proseware Laptop15.4W M518 Black	Laptops	Computers	Edo	South South	\$7,580	\$4,955.90
10	Store	No Discount	Proseware Laptop15.4W M518 White	Laptops	Computers	Edo	South South	\$7,580	\$4,861.10
10	Store	No Discount	Simpson LCD17W E203 White	Monitors	Computers	Edo	South South	\$1,290	\$57.70
10	Store	No Discount	Kekule Projector 480p M480 Black	Projectors & Screens	Computers	Edo	South South	\$2,290	\$2,225.80
10	Store	No Discount	SV PCI Network Adapter E903 Silver	Computers Accessories	Computers	Edo	South South	\$419.9	\$400.70
10	Store	No Discount	Kekule USB Wave Multi-media Keyboard E280 Black	Computers Accessories	Computers	Edo	South South	\$159	\$156.10
10	Store	No Discount	Simpson Laptop15 M1501 Silver	Laptops	Computers	Edo	South South	\$6,990	\$3,151.90
10	Store	No Discount	Kekule Digital camera accessory kit M100 Grey	Computers Accessories	Computers	Edo	South South	\$239	\$38.30
10	Store	No Discount	Proseware Projector 1080p LCD86 Black	Projectors & Screens	Computers	Edo	South South	\$22,950	\$16,312.60
10	Store	No Discount	Fabrikam Laptop15 M5000 White	Laptops	Computers	Edo	South South	\$6,990	\$4,968.50
10	Store	No Discount	WWI Screen 106in M1609 White	Projectors & Screens	Computers	Edo	South South	\$2,510	\$936.60

The same step was repeated for the gross profit margin, by using the formula:

Gross profit margin = (Table_1[Revenue] - (Table_1[Unit Cost] * Table_1[Order Qty])) / Table_1[Revenue]

The format of the gross profit margin column was changed to *percentage*.

File Home Help Table tools Column tools

Name: Gross profit margin Format: Percentage Summarization: Sum Data type: Decimal number Data category: Uncategorized

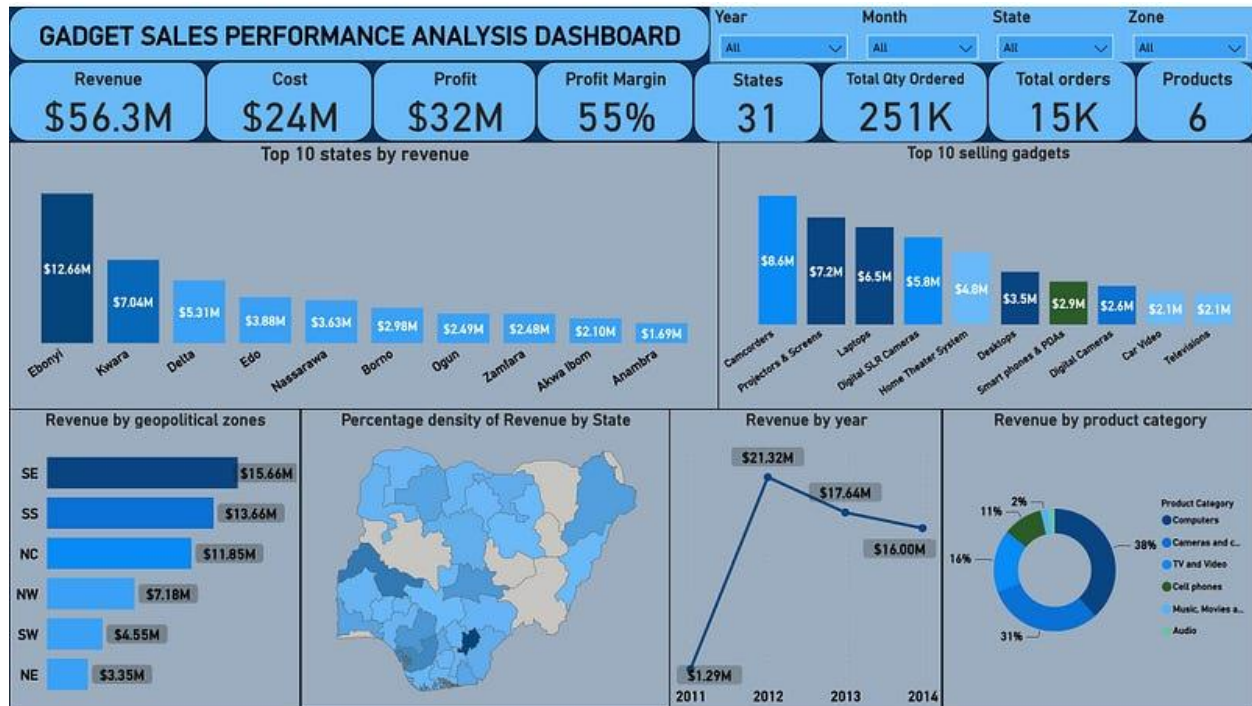
Structure: Formatting: Properties: Sort by column: Sort Data groups: Groups Manage relationships: Relationships New column: Calculations

1 Gross profit margin = (Table_1[Revenue] - (Table_1[Unit Cost] * Table_1[Order Qty])) / Table_1[Revenue]

Promotion Name	Product Name	Product Sub Category	Product Category	State	Zone	Revenue	Gross profit	Gross profit margin
No Discount	SV PCI Network Adapter E904 Silver	Computers Accessories	Computers	Edo	South South	\$419.9	\$98.80	23.53%
No Discount	Simpson Laptop16 M1601 Blue	Laptops	Computers	Edo	South South	\$5,990	\$5,418.40	90.46%
No Discount	Kekule Notebook Peripheral Kit M69 White	Computers Accessories	Computers	Edo	South South	\$165	\$22.80	13.82%
No Discount	Fabrikam Laptop12 M2001 Silver	Laptops	Computers	Edo	South South	\$3,829.5	\$2,337.80	61.05%
No Discount	Fabrikam Laptop14.1W M4180 Red	Laptops	Computers	Edo	South South	\$4,569	\$1,735.50	37.98%
No Discount	Proseware Projector 1080p DLP86 Black	Projectors & Screens	Computers	Edo	South South	\$24,990	\$10,745.40	43.00%
No Discount	Proseware Laptop15.4W M518 Black	Laptops	Computers	Edo	South South	\$7,580	\$4,955.90	65.38%
No Discount	Proseware Laptop15.4W M518 White	Laptops	Computers	Edo	South South	\$7,580	\$4,861.10	64.13%
No Discount	Simpson LCD17W E203 White	Monitors	Computers	Edo	South South	\$1,290	\$57.70	4.47%
No Discount	Kekule Projector 480p M480 Black	Projectors & Screens	Computers	Edo	South South	\$2,290	\$2,225.80	97.20%
No Discount	SV PCI Network Adapter E903 Silver	Computers Accessories	Computers	Edo	South South	\$419.9	\$400.70	95.43%
No Discount	Kekule USB Wave Multi-media Keyboard E280 Black	Computers Accessories	Computers	Edo	South South	\$159	\$156.10	98.18%
No Discount	Simpson Laptop15 M1501 Silver	Laptops	Computers	Edo	South South	\$6,990	\$3,151.90	45.09%
No Discount	Kekule Digital camera accessory kit M100 Grey	Computers Accessories	Computers	Edo	South South	\$239	\$38.30	16.03%
No Discount	Proseware Projector 1080p LCD86 Black	Projectors & Screens	Computers	Edo	South South	\$22,950	\$16,312.60	71.08%
No Discount	Fabrikam Laptop15 M5000 White	Laptops	Computers	Edo	South South	\$6,990	\$4,968.50	71.08%

Data visualization:

After cleaning and analyzing the data, it was finally time to create some visualizations from the insights discovered in the dataset in order to make the gathered data easier for stakeholders to comprehend.



Stick around a little more, and I'll show you how I built this amazing dashboard.

Data visualization Steps:

Visualizing data is important because it passes a comprehensible message across to stakeholders in the form of pictures; it helps them gain meaningful insight from vast amounts of data. *"A picture truly is worth more than a thousand words!"*.

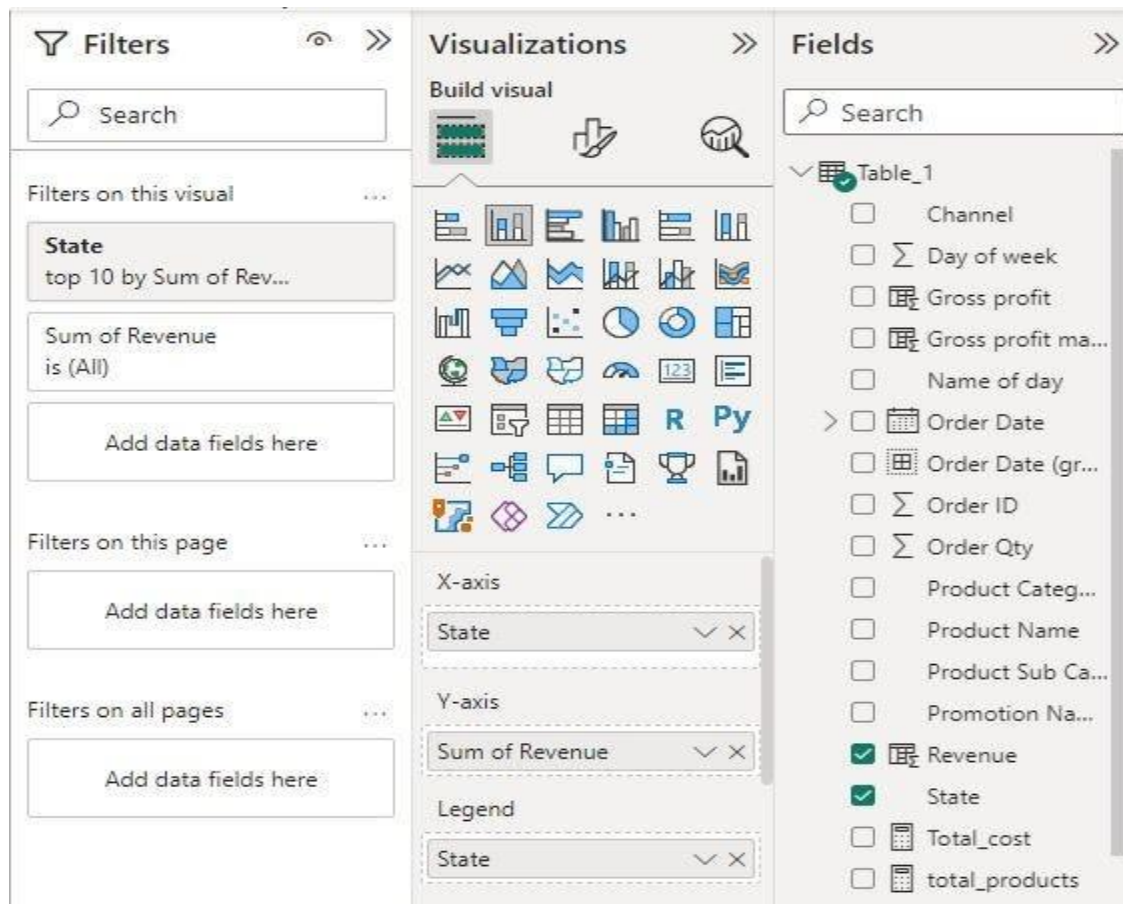
It is important to give some quality time studying the dataset to be able to generate meaningful insights from it.

Here are some of the insights I got from the dataset:

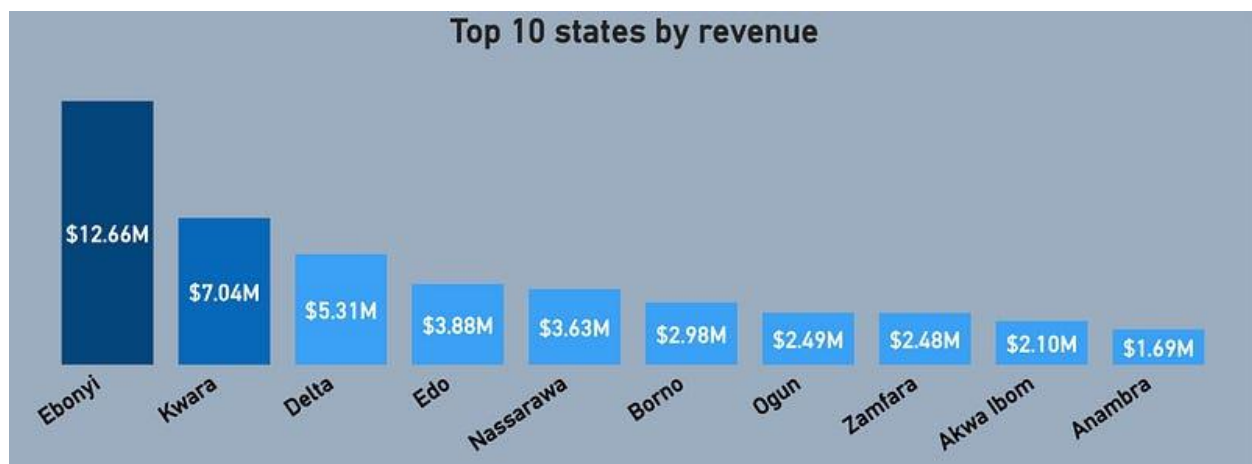
- The revenue generated by stores in each state, I also narrowed it down to the top 10 states with the highest revenue:**

I created this visual by comparing each state (x-axis) with the total revenue generated by each state (y-axis), By simply checking each box in the fields pane, the intellisense of power BI sometimes allows it to automatically figure out what axis each field should belong to. On the visualization pane, I selected the *'stacked column chart'* to be used to visualize my comparison. Knowing what

chart to use and when to use it is an important skill set every data analyst should have. Next, on the filters pane, I filtered the *state* to only show the top 10 states with the highest revenue because there were 31 states in total and showing all of them was not relevant to my analysis dashboard.

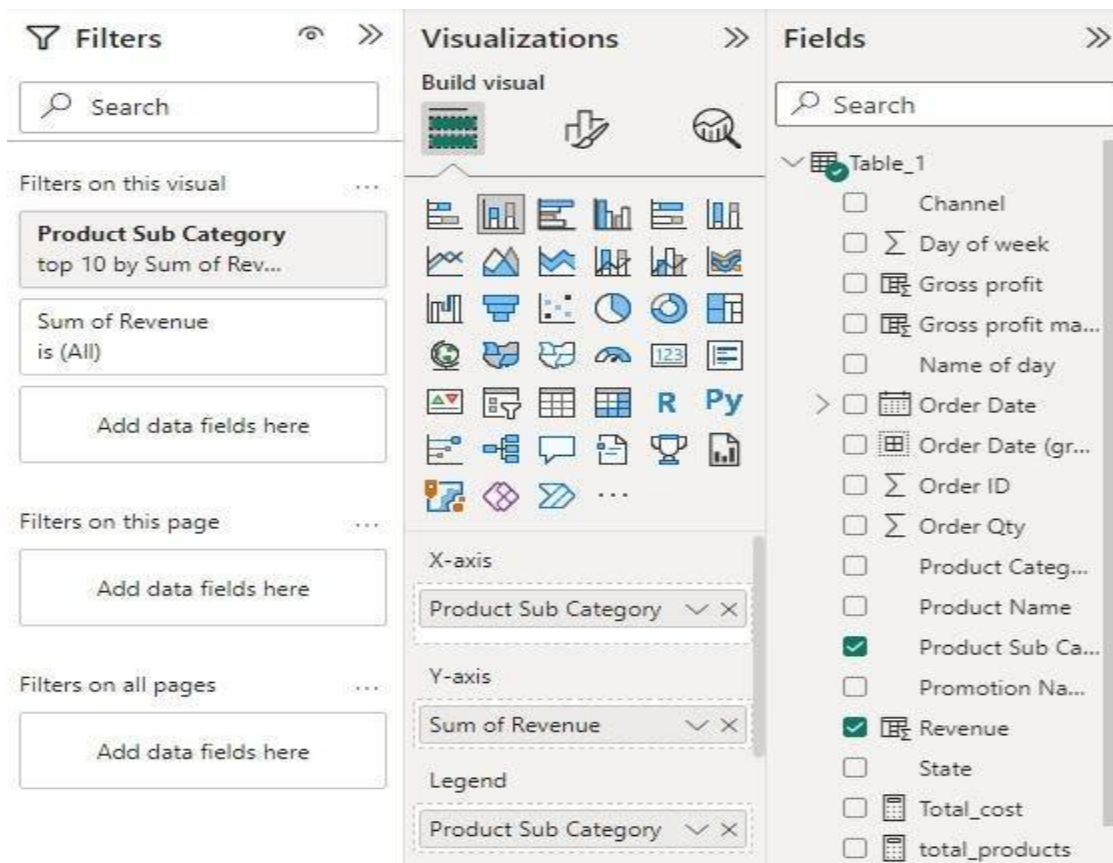


The result of my visualization:

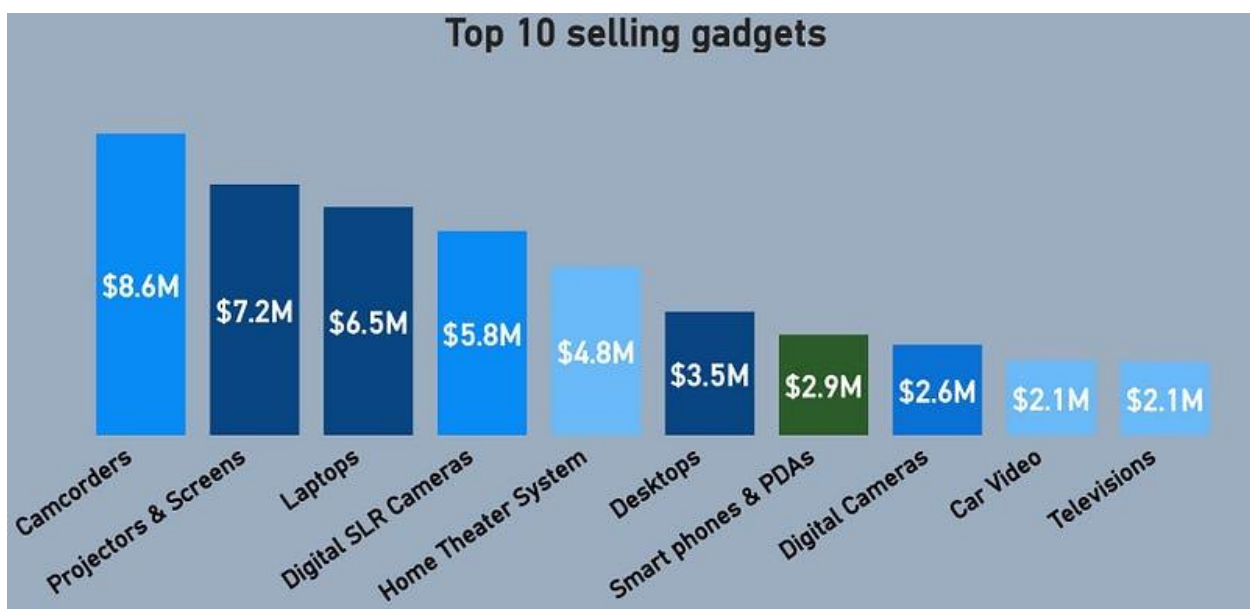


2. The revenue generated by the top 10 highest-selling gadgets (*product subcategory*):

Similar to my first visual, I created this by comparing the product subcategories (x-axis) with the total revenue generated by each of them (y-axis). I also used a 'stacked column chart' and I filtered the product subcategory to show the top 10 selling product subcategories by revenue generated.

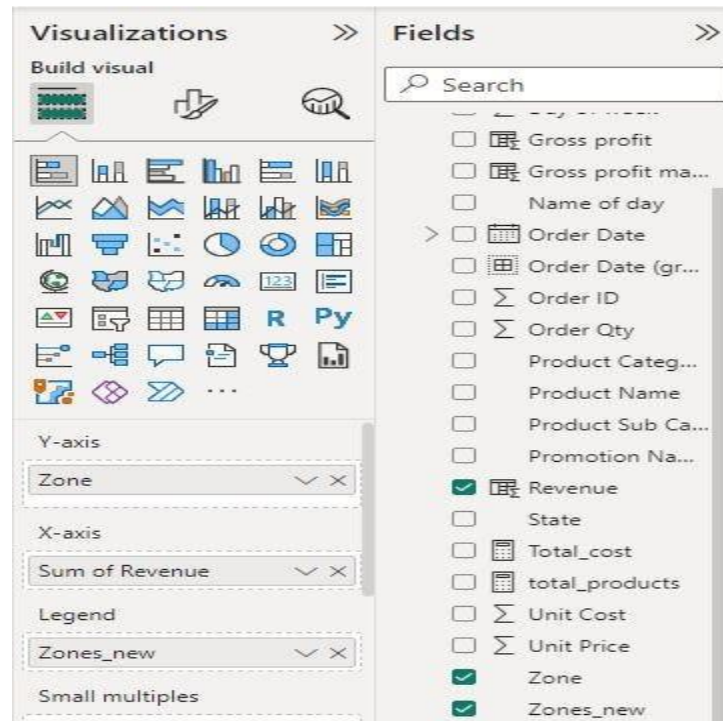


The result of my visualization:

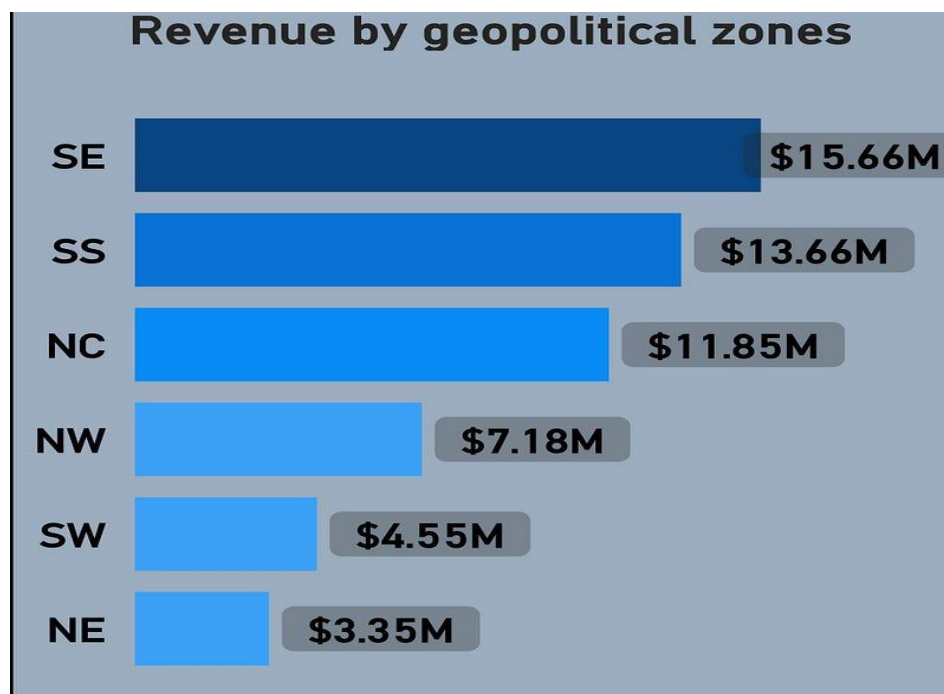


3. The revenue generated by each geopolitical zones in Nigeria:

I created this visual by comparing the geopolitical zones (y-axis) with the revenue generated by each (x-axis). A 'stacked bar chart' was used for the visualization.



The result of my visualization:

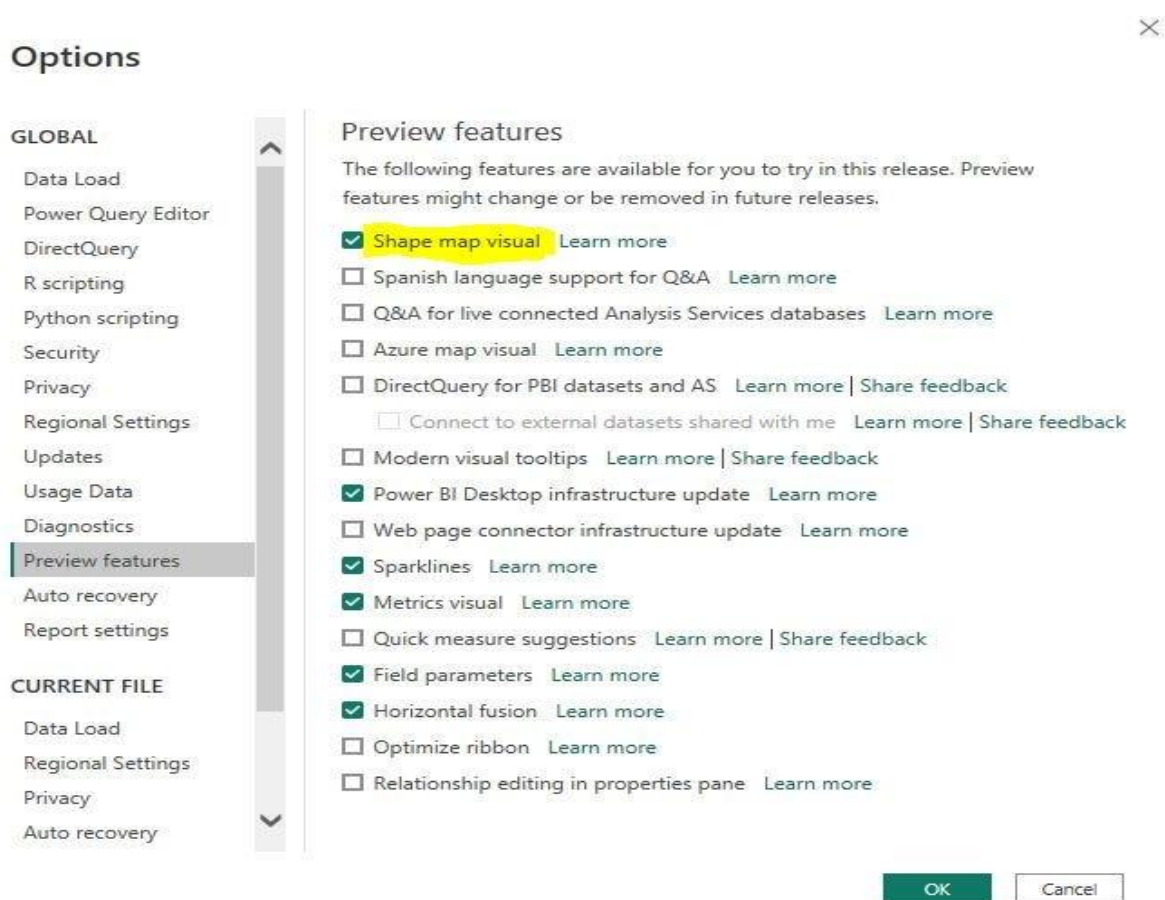


4. The percentage density of revenue by states:

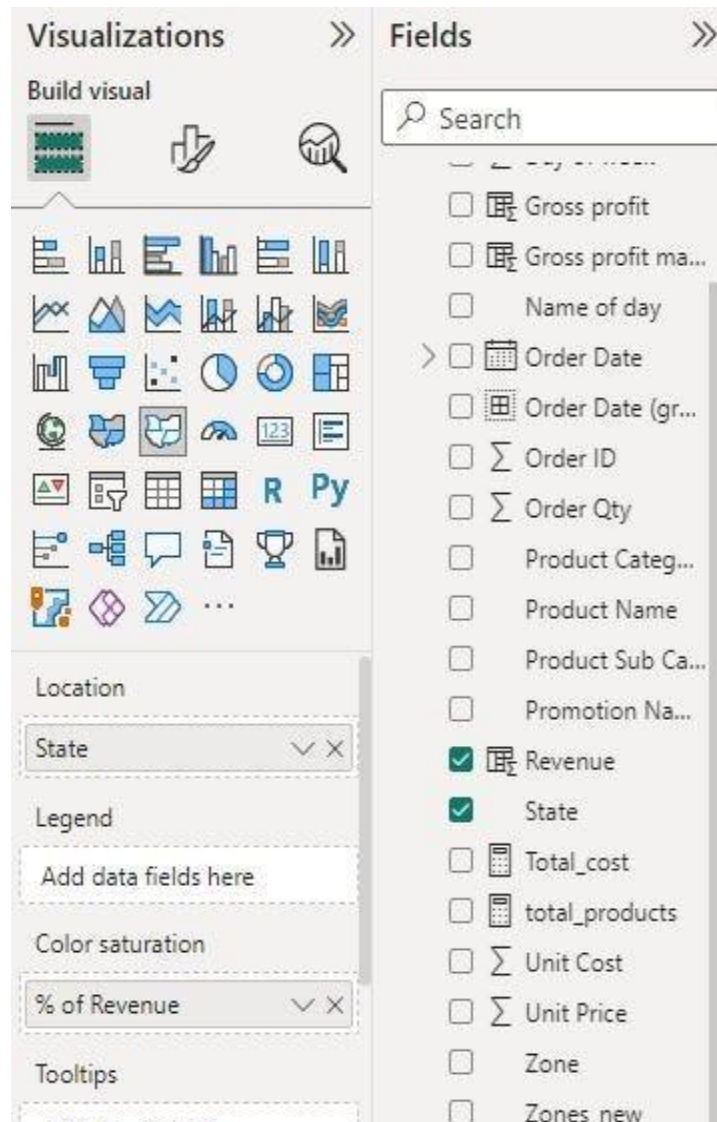
The percentage density shape map shows the concentration by states in terms of revenue generated, *'the higher the revenue the darker the gradient, the lower the revenue the lighter the gradient'*.

Shape maps are used to specifically narrow down the map of a country, region or state, rather than the entire continent.

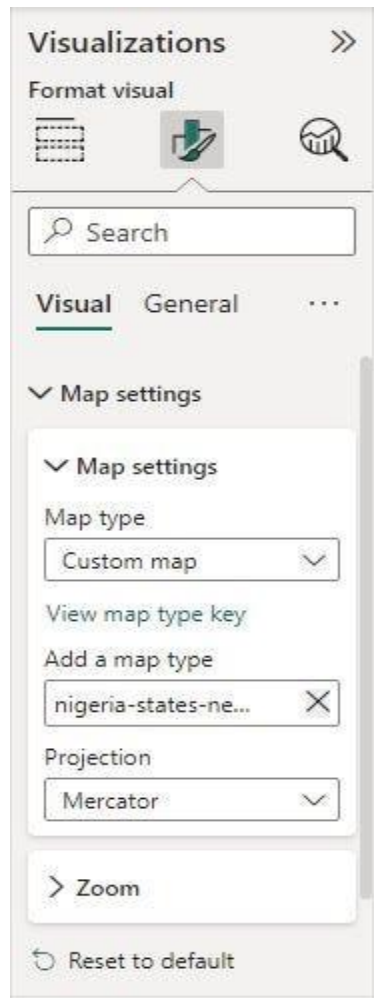
Creating a shape map takes a few extra steps because the shape map is not automatically enabled in your power BI features. In order to add the shape map, follow these steps: Sign in to the power BI service, click file >> option and settings >> options >> preview features >> **enable** shape map visual >> **click OK**.



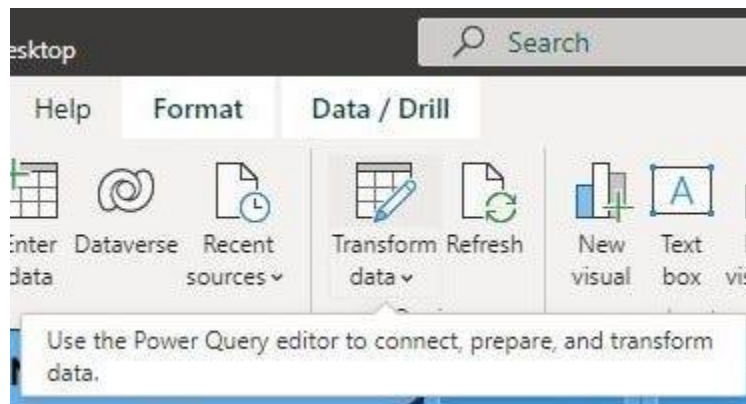
After the shape map was added to my visualization pane, I inserted the shape map into my dashboard and used the state as **Location** and the revenue generated as the **saturation** to show the concentration of the states in terms of revenue (*in percentage*).



I noticed that after inserting the state as Location, power BI still gave me a map of America instead of a map of Nigeria, this was normal as power BI uses the map of America as the default map. In order to rectify this, I clicked on format visual >> Map settings >> clicked the 'map type' dropdown and selected 'Custom map' >> then I clicked 'add map type' by browsing through my file directory >> selected a shape map (.JSON) file (which is a Nigerian states custom shape map in JSON format). Download the custom Nigerian states shape map file [here](#). As soon as I added the custom shape map, the Nigerian map was inserted with all 36 states of Nigeria and the Federal Capital Territory.



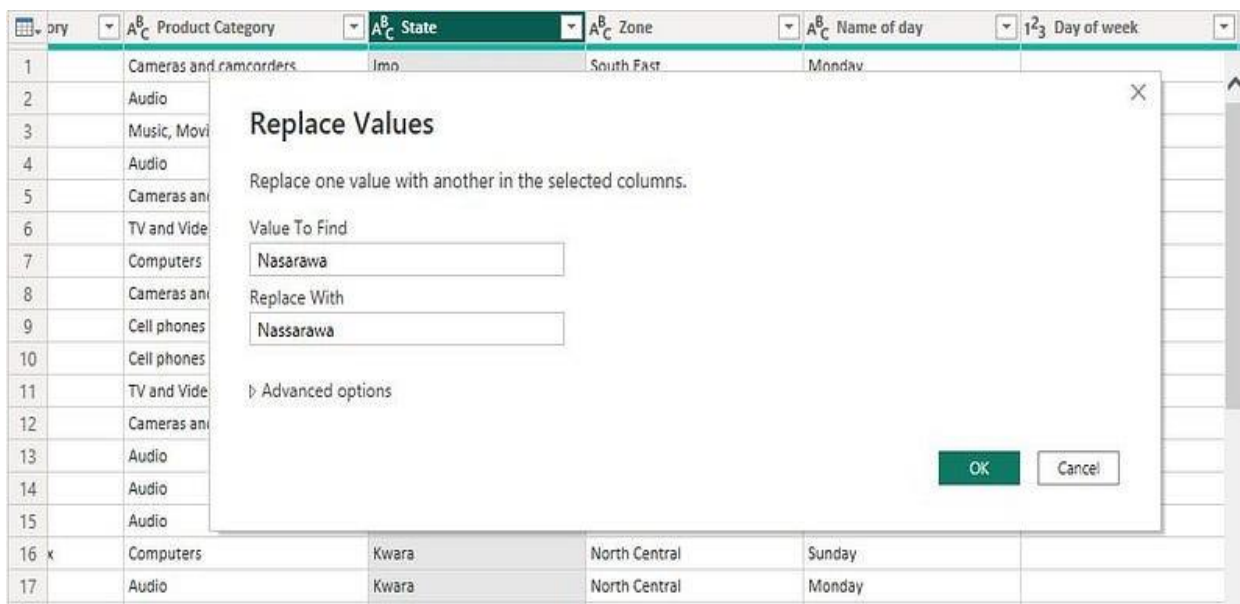
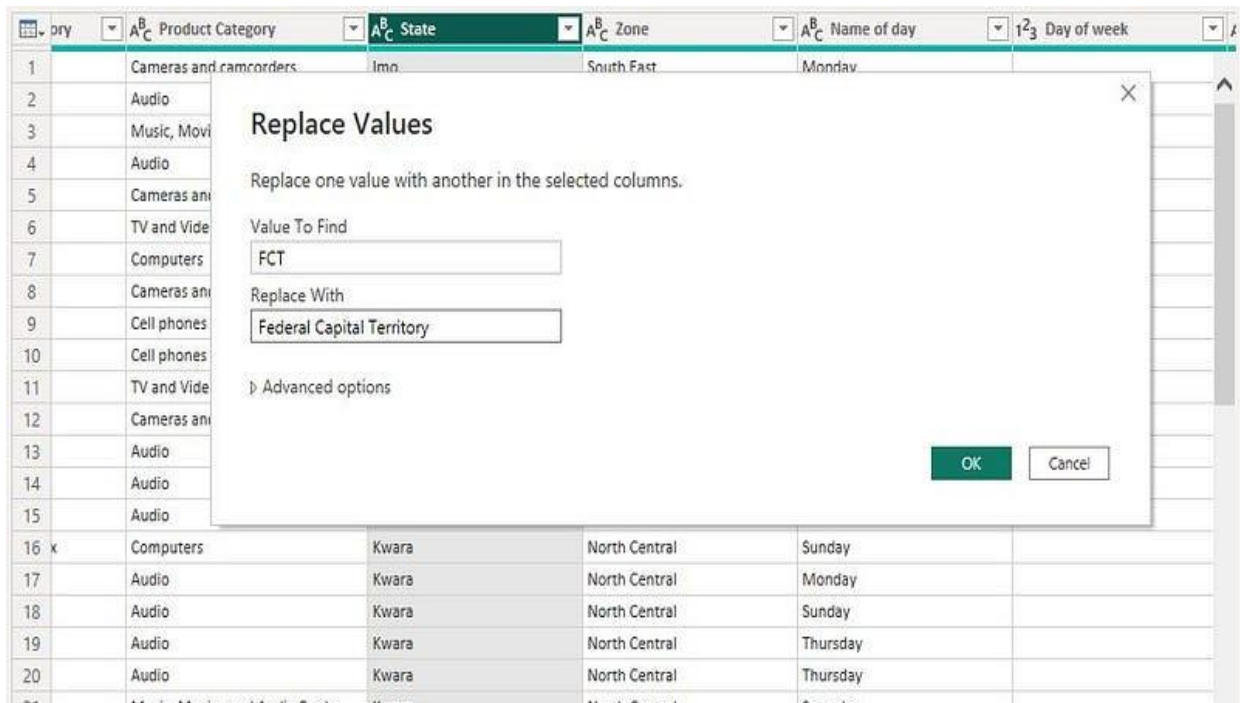
But there was a problem with my map, the FCT and nasarawa state were both blank on the map even though they were a part of the 31 states in which the gadgets store were located. So I made some investigations and I found that 'FCT' was named 'Federal Capital Territory' and nasarawa was named 'nassarawa' on the custom shape map file. In order to rectify this, I transformed my dataset to return back to power query to further clean the data.



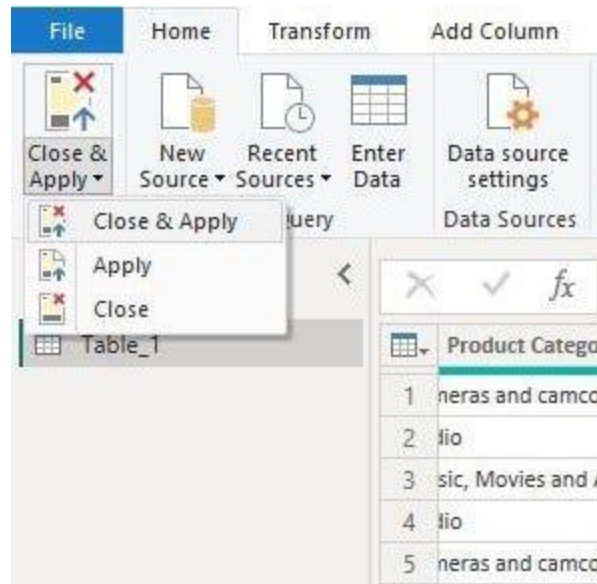
In the power query, I used ‘replaced values’ to find and replace the names of the states.

Product Sub Category	Product Category	State
Digital SLR Cameras	Cameras and camcorders	Imo
MP4&MP3	Audio	Imo
Movie DVD	Music, Movies and Audio Books	Imo
Bluetooth Headphones	Audio	Delta
Digital SLR Cameras	Cameras and camcorders	Kwara
Car Video	TV and Video	Kwara
Laptops	Computers	Kwara
Camcorders	Cameras and camcorders	Kwara
Smart phones & PDAs	Cell phones	Kwara
Smart phones & PDAs	Cell phones	Kwara
Televisions	TV and Video	Kwara
Digital SLR Cameras	Cameras and camcorders	Kwara
MP4&MP3	Audio	Kwara
MP4&MP3	Audio	Kwara
MP4&MP3	Audio	Kwara
Printers, Scanners & Fax	Computers	Kwara
Recording Pen	Audio	Kwara
Recording Pen	Audio	Kwara
Recording Pen	Audio	Kwara
Recording Pen	Audio	Kwara
Movie DVD	Music, Movies and Audio Books	Kwara
Car Video	TV and Video	Kwara
Bluetooth Headphones	Audio	Kwara
Smart phones & PDAs	Cell phones	Kwara

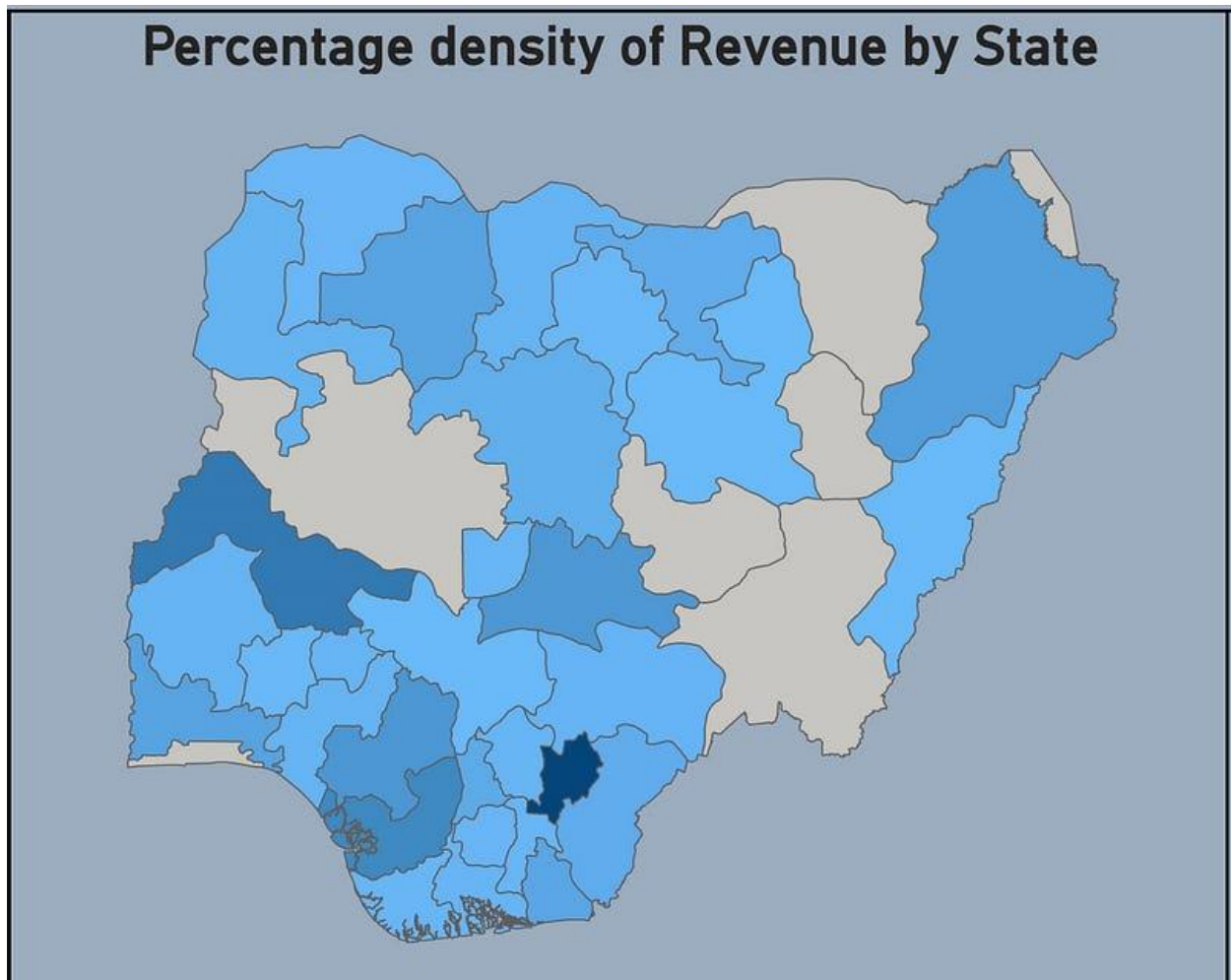
Then I replaced the names of the states with the corresponding names in the shape map file.



Finally, I clicked on 'close and apply' in order to return back to power BI. The changes were effected and all 31 Nigerian states were inserted into the custom shape map.

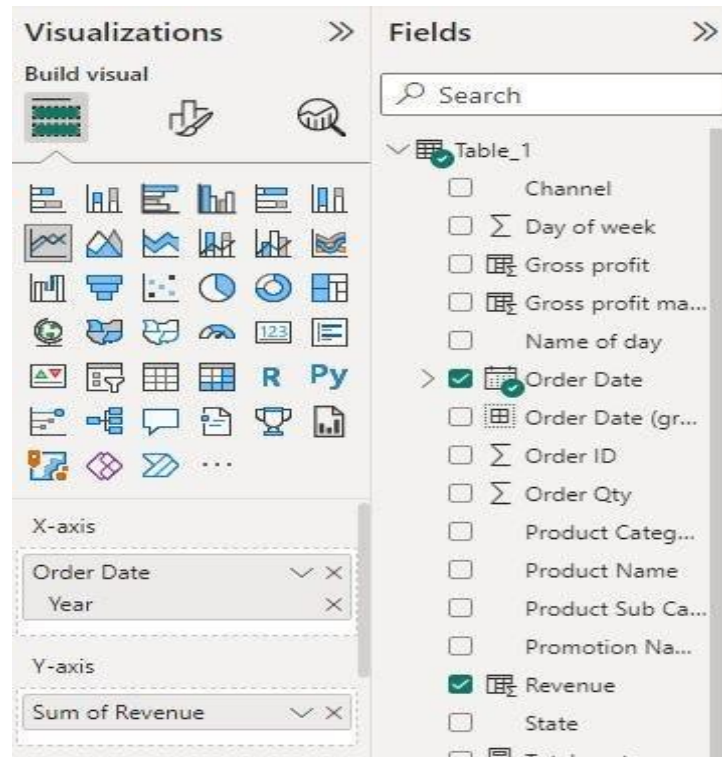


The result of my shape map visualization:

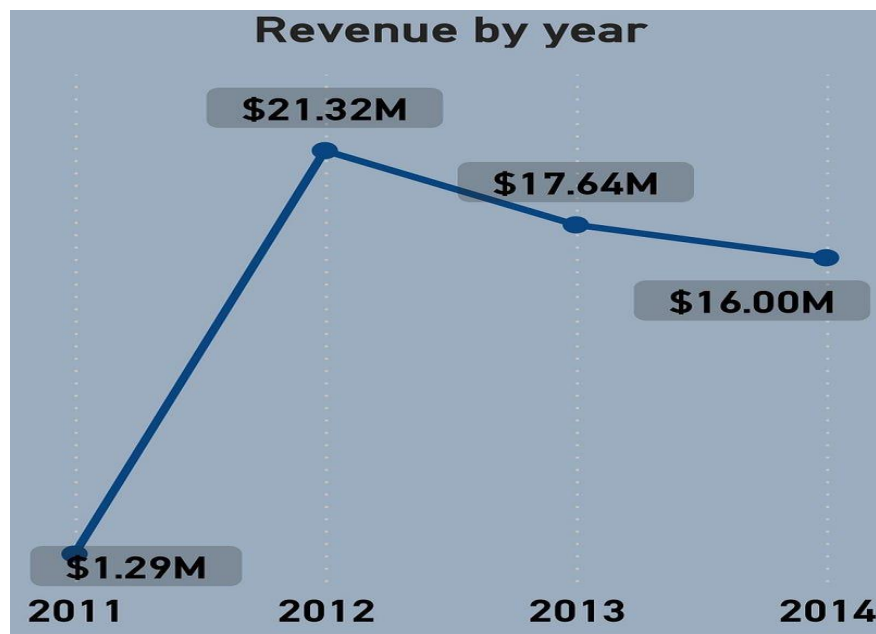


5. The revenue generated in each year from 2011–2014:

I created this visual by comparing the years (x-axis) with the revenue generated in each year (y-axis). A line chart was used to show this comparison because line charts are the perfect visual chart to show changes over time.

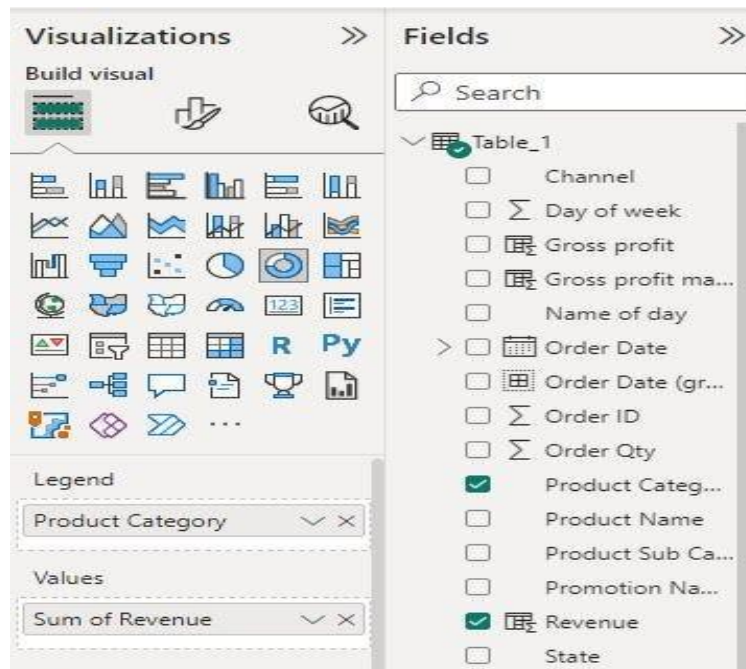


The result of the visualization:

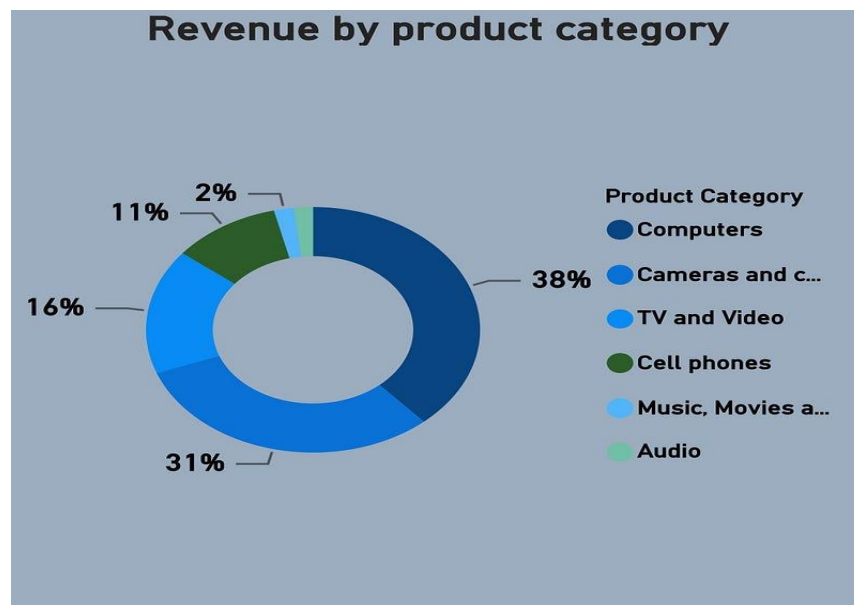


6. The revenue generated by each product category:

Finally, I created this visual using a doughnut chart to compare the product categories based on the revenue generated by each product category. The doughnut was used because doughnut charts are perfect for calculating the percentage composition between multiple items, the doughnut and the pie chart perform the same function, but I chose to use the doughnut chart this time simply out of preference.



The result of my visualization:



SLICERS:

slicers enable a user to sort and filter a packed report and view only the information they want based on certain criteria. I added 4 slicers to filter my analysis based on the year, month, state, and geopolitical zone.



Slicers can be added from the visualization pane



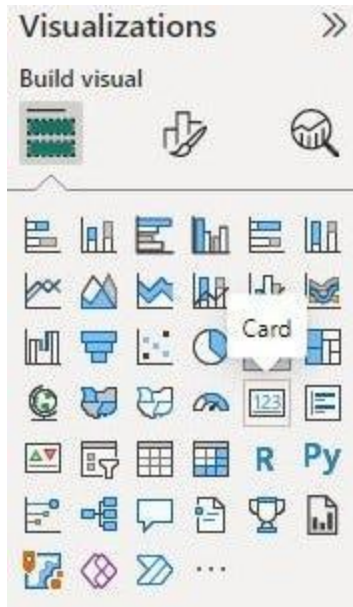
CARDS:

Cards are used to display KPIs (*key performance indicators*), which are aggregated information of a single numeric measure value. Cards are useful because they highlight key values that interest stakeholders at first glance.



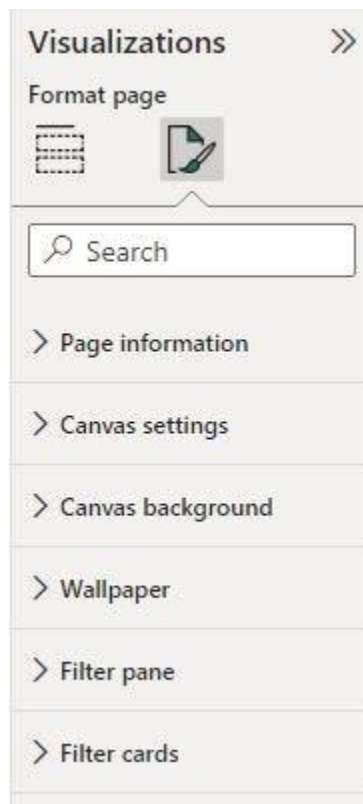
A few of these cards added show the revenue and profit, these are key values that catch the attention of stakeholders, wouldn't you agree?

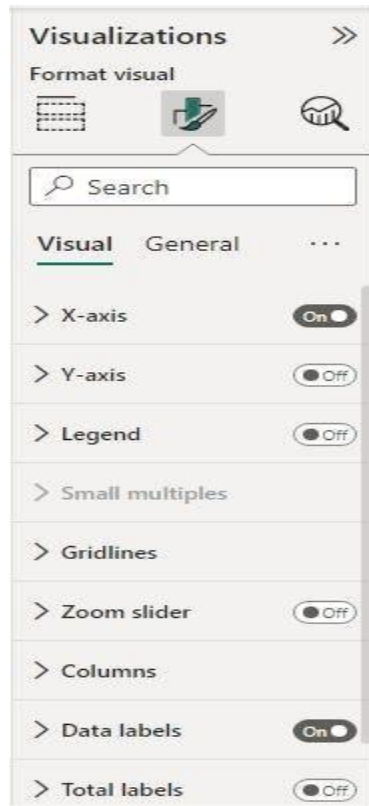
Cards can be added from the visualization pane



USING FORMAT VISUAL:

A format visual pane contains settings to format the entire dashboard area and each individual chart.





Findings:

1. The gadget store has a total of 6 products, which are further divided into 22 sub-product categories for sale.
2. The gadget store is located in 31 states in Nigeria.
3. Ebonyi state in the southeast region of Nigeria sold the most products thereby generating the highest revenue from 2011 to 2014.
4. Computers are the highest selling products with over 38% of the products ordered in the last 4 years, and the camcorders are the highest selling gadgets in the *cameras and camcorders* products sub-category.
5. The highest revenue was generated in 2012 having profit worth \$12 million, with Ebonyi state selling over \$4.7 million worth of products.
6. The total number of orders all over the country was 15,000 orders and 251,000 quantities with those orders.
7. There was a decline in revenue generated from 2012 to 2013 and a further decline from 2013 to 2014. The decline was a result of the reduction in total orders.

Recommendation:

1. With the progressive sales performance of the gadget stores, more stores should be created in the remaining 6 states in Nigeria, especially in Lagos state which is a cosmopolitan city.

CONCLUSION

Cleaning the gadget sales dataset was a bit challenging, but having clean data is always encouraged in order to obtain accurate analysis and the best visualization possible.