



Consolidating KPIs in Power BI: The only guide you'll ever need

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Consolidating KPIs in Power BI: The only guide you'll ever need

Are you wondering how to consolidate your KPIs? Then you are in the right place. Key performance indicators (KPIs) are crucial to quickly understand what is going on in your organization and also why.

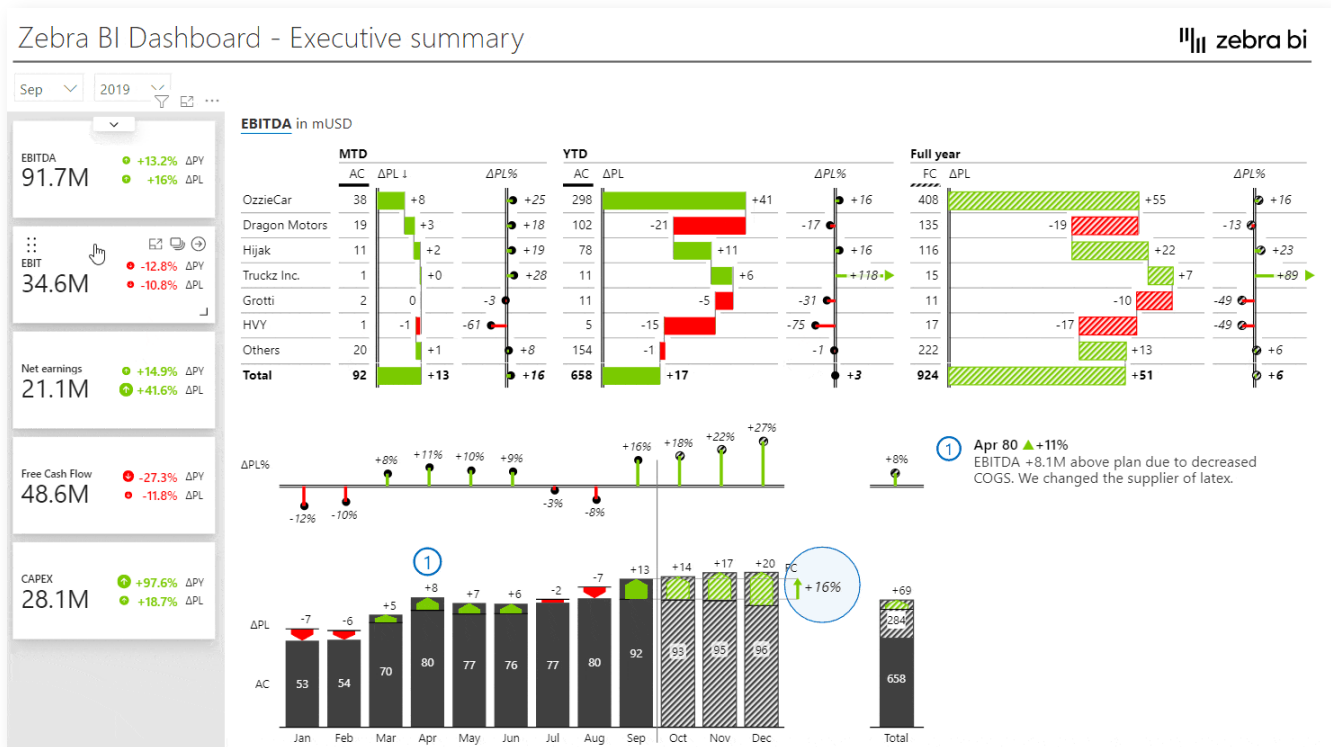
Therefore, having an understandable and actionable dashboard is the first step in making the right decision. However, before discussing the visualization of your KPIs, your data needs to be prepared and consolidated properly. Let's see how.

This guide will help you to consolidate your KPIs in dashboards and the techniques you can use to do it. Either from **Excel**, using **Power Query**, or **DAX** and each approach has its benefits and drawbacks. The end result will be dashboards that **perform better**, are much **easier to use**, and are **far more actionable** than dashboards relying on static data.

Examples of consolidated KPIs

Before we begin looking at the how-to's, let's start by taking a quick look at how we came up with the idea. We published a nice-looking dashboard that immediately got a lot of feedback and questions about how we built it, which made us go back and look at the concepts behind it.

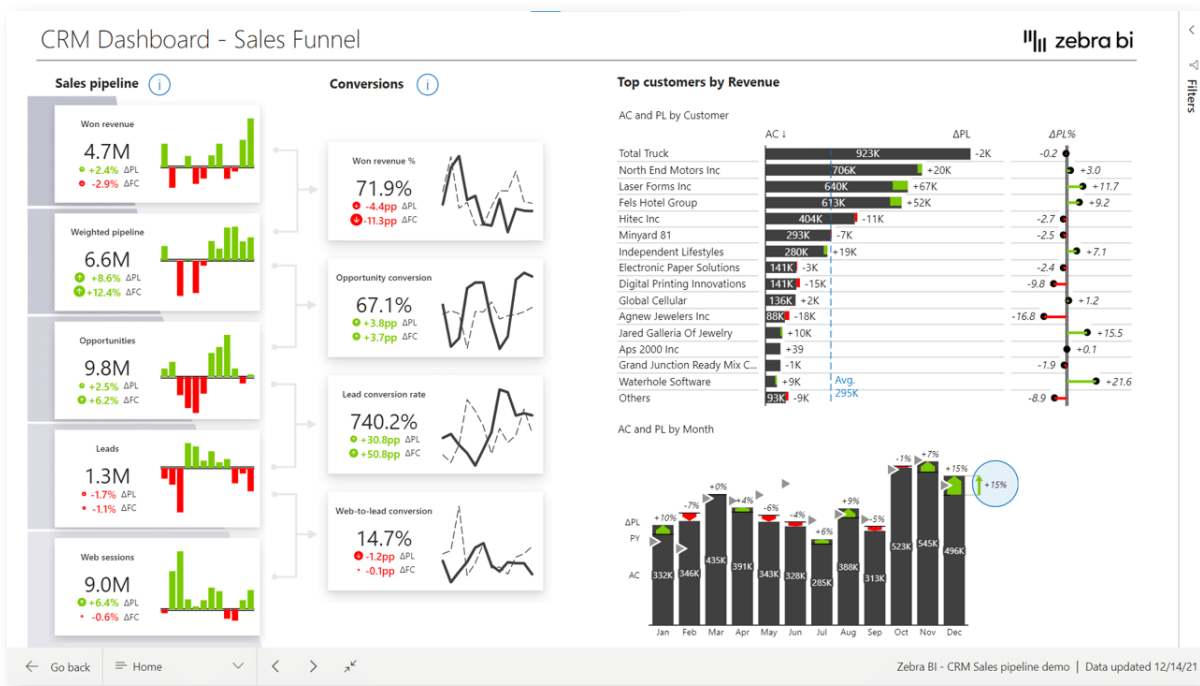
It's actually a fairly simple dashboard with **KPIs displayed as cards** on the left.



Users can click on individual KPIs to filter the information displayed on the right of the KPIs. A click on the EBITDA card, shows EBITFA details by business units or months, and so on. After you click on another card, the information is again filtered for that KPI.

This is a **great example of a consolidated dashboard**. It's extremely user-friendly and information-dense, but sadly not something we typically see in Power BI dashboards or reports.

Another example is the **CRM dashboard below**. We're working with a **sales funnel** that follows the same principle. This is one visual with several KPIs, such as won revenue, weighted pipeline, and other types of revenue. **Each card is filtering all the other visuals** on a page for easy and intuitive navigation through data. You can explore other reports and **[download our templates for free](#)**¹.

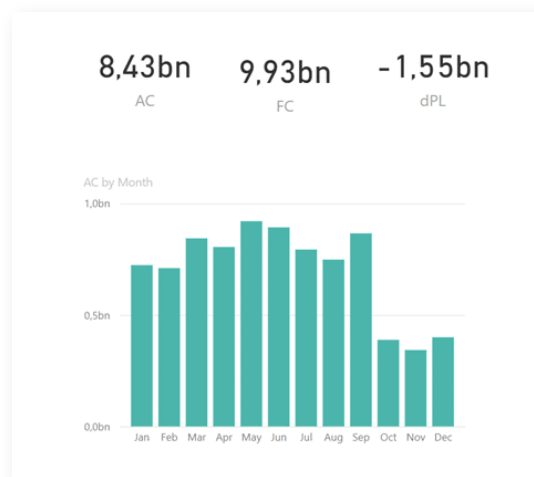


If you want to learn how to structure actionable dashboards, what to include on the landing page, where to put it, and what tools in Power BI should you use, **[check out our guide on KPI dashboards](#)**².

Static cards are not enough

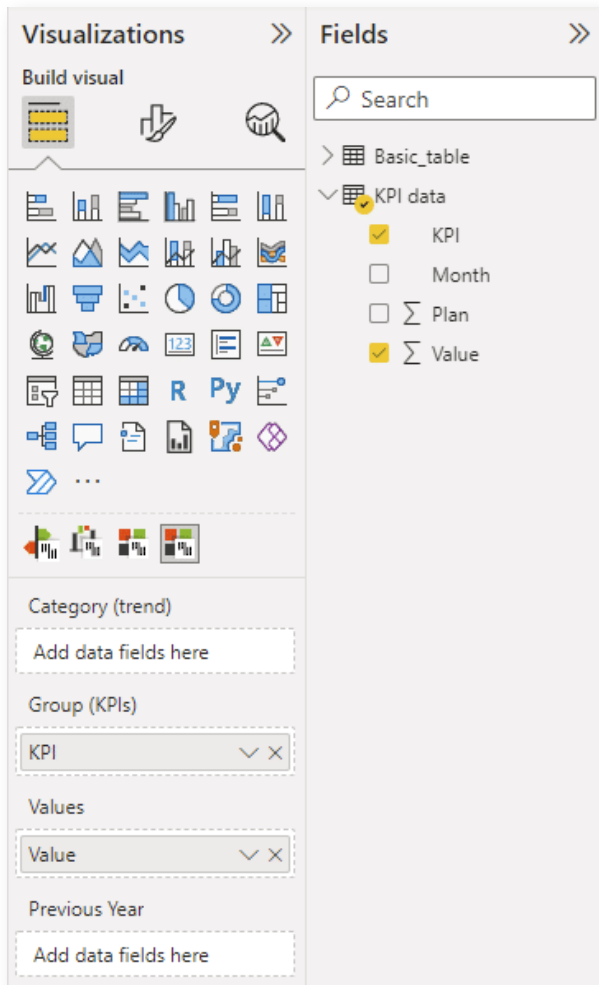
When you get started on a project in Power BI, you are working with a table with numerous measures. Some of them you might turn into cards and some might serve as the basis for charts when combined with date values. After some tedious clicking and copying and pasting, you end up with a simple dashboard showing your basic data.

The problem here is that these cards with KPIs are **static**, just plain numbers without visual elements that **lack any interactivity**. You cannot click on them to **filter other elements on the page**, such as other charts and tables.



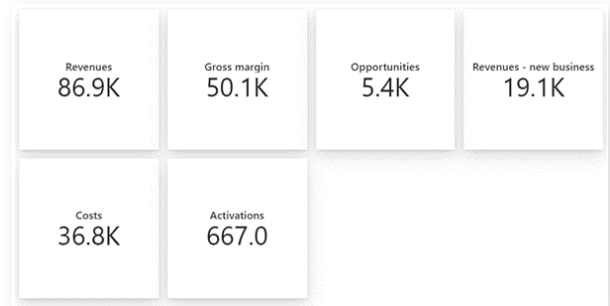
Working with Zebra BI Cards

Now, let's switch to the **Zebra BI Cards visual**³. You can find the data in your **Cards_DataSetup_1_Basic** PBIX file. To create **multi cards**, simply add **KPI** and **Value** measures to the Zebra BI Cards visual.

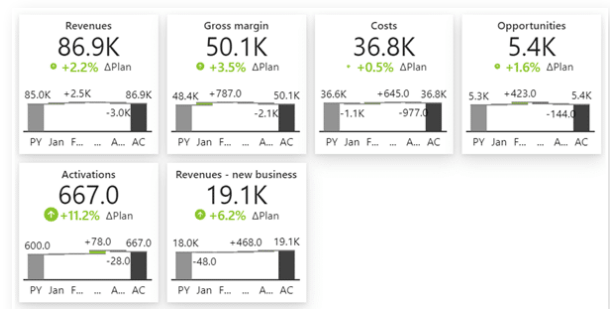


You now have **all your KPIs in one visual**, making it very easy to work with them. You can **filter** them or **add other dimensions**, such as time and plan in our case. You can still do the comparisons because the comparison is just a different business scenario, so you really have a lot of flexibility.

Essentially, you need just two clicks to go from this ...



... to this.



In order to do this, you need to **transform your Power BI model** in a way to collect all these measures into a KPI dimension. This will allow you to do things such as using **scaled charts** in the visual. This provides users with **better insight into data** and allows them to **make visual comparisons** without having to click through individual data points. The main benefit is that you can **show multiple KPIs** with a dedicated card for every KPI in a **single visual**.

The last benefit is behind the scenes. When you create a dashboard with many separate elements, it **impacts its performance**. When you're dealing with multiple charts and cards and filters, a **single refresh can balloon to tens of seconds**, which is just unacceptable for the end users. When you are working with a consolidated KPIs data model, however, we are talking about milliseconds for a single refresh since everything is created within one visual.

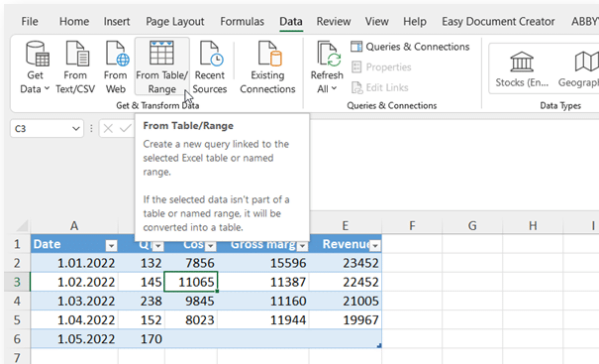
Let's look at the three ways to consolidate KPIs.

Working to consolidate KPIs in Excel

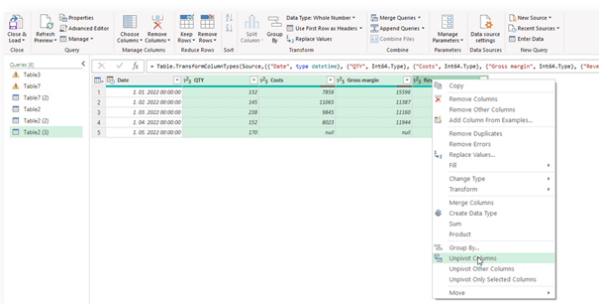
We'll start with Excel. Open the file **Data_inputs_basic.xlsx** in your download package to load a simple table with four KPIs: quantity, costs, gross margin, revenues. Each is in its own column.

	A	B	C	D	E	F
1	Date	Q1	Cos	Gross marg	Revenu	
2	1.01.2022	132	7856	15596	23452	
3	1.02.2022	145	11065	11387	22452	
4	1.03.2022	238	9845	11160	21005	
5	1.04.2022	152	8023	11944	19967	
6	1.05.2022	170				
7						

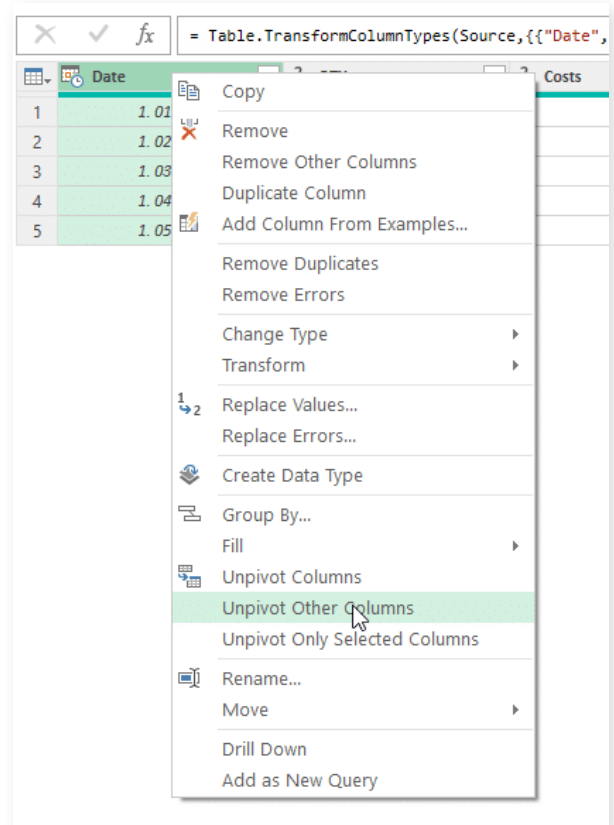
The basic operation that allows you to build this KPI dimension is called **unpivoting**. Start by clicking the **Data** tab on your Excel ribbon and then select the **From Table/Range** command. This will create a query that will actually turn those columns into one single column in the tool called Power Query.



This opens up a window with Power Query, where you can do many different transformations to your data. Start by selecting the columns you want to transform, right-clicking on the **column heading**, and selecting **Unpivot columns**.



All of your columns will be consolidated in one column, so you're left with just two columns - your **KPIs** and the **value**. Another way is to select the one column you are not unpivoting, right-clicking it and selecting the **Unpivot other columns**.



The result is exactly the same, but the approach is actually better. If you add another column with a KPI to your starting table here at a later date, this transformation will **automatically apply for additional columns**. You won't have to change anything.

Click Close & Load and you get a new table in Excel with all KPIs in one data field, which is the basic prerequisite for what we are doing.

Consolidate KPIs with Power Query - Example No. 1

Power Query tool is actually the same in **Power BI** and in **Excel**. What we just did right now in Excel, you can do in Power BI. You can just connect to this Excel table to Power BI and then do the same thing with the Power Query in Power BI.

It's slightly more complicated, though. This time, on top of our four KPIs - quantity, cost, gross margin, and revenues - we will also have a scenario. We will not work in Excel for this example. We will connect to this table from Power BI and do everything in Power BI.

This is a better approach because you don't have to have your starting and transformed data duplicated in Excel and you don't have to redo all steps.

NOTE: Whenever you are using Excel as a data source for Power BI, it is recommended that you click on the table and press **CTRL+T**. This creates an Excel table from the values in your spreadsheet.

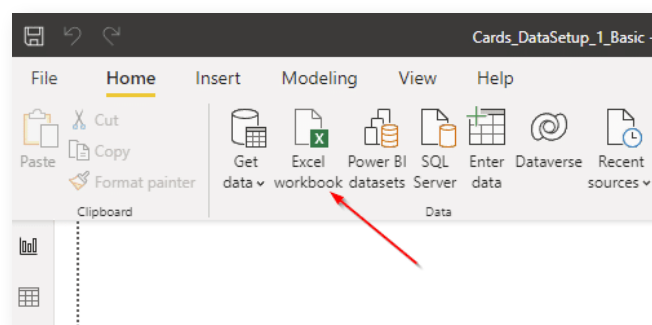
This time, we're working with a hierarchy on the columns. For each quantity, we have the actual and plan, creating two levels in the table.

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8
	QTY		Costs		Gross margin		R
Date	Actual	Plan	Actual	Plan	Actual	Plan	
1.01.2022	132	120	7856	9000	15596	11000	
1.02.2022	145	140	11065	9400	11387	10600	
1.03.2022	238	160	9845	9200	11160	12800	
1.04.2022	152	180	8023	9000	11944	14000	
1.05.2022	179	180					

This will make the unpivoting procedure more complex but worth it for the results.

Load your data into Power BI

In Power BI, click the **Excel workbook** button to load the data.



Select the Excel file you worked on in the previous step and then select **Table_webinar** workbook from the Navigator. This will **load the data** into Power BI.

Now, select the Transform data button on your Home tab in Power BI and select the **Table_webinar** query from the right-hand pane.

Column1	Column2	Column3	Column4	Column5	Column6
1	null	QTY		null	Gross margin
2	Date	Actual	Plan	Actual	Actual
3	1. 01. 2022	132	120	7856	9000
4	1. 02. 2022	245	240	11065	11000
5	1. 03. 2022	238	280	8843	9200
6	1. 04. 2022	152	180	8023	9000
7	1. 05. 2022	179	280	null	null

Because of the hierarchy, it looks sort of messy. To fix this, we'll transpose the table first. On the **Transform** tab in the ribbon, select **Transpose**. This rotates the table by 90 degrees.

Now you have an issue with the empty (null) values. You can easily solve this by filling the content down. Right-click on the column header and select **Fill > Down**.

The next step is to use the first row as headers, which you do by selecting **Home > Use First Row As Headers**. This is starting to look like a regular table now. We also already have KPIs consolidated as a result of the transpose action.

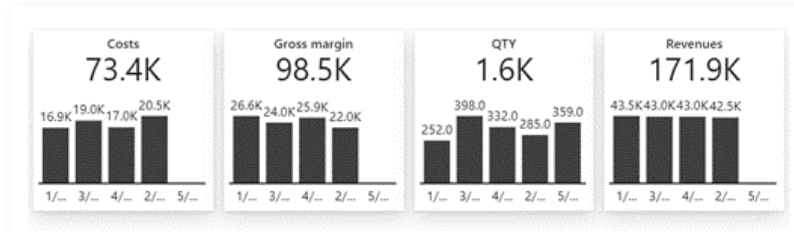
However, we don't want to have separate dates as columns, so we need to unpivot the dates. Simply select the first two columns and use the **Unpivot other columns** command from the right-click menu.

You can now do some housekeeping by renaming individual columns and setting up formatting and then testing whether it works. You should see a **Table_Webinar** measure in your Fields selection pane. From here, you can add these values to the Power BI Cards visual.

Column1	Column2	Column3	Column4
1		1. 01. 2022	
2	QTY	132	
3	QTY	120	
4	Costs	7856	
5	Costs	9000	
6	Gross mar	15596	
7	Gross mar	11000	
8	Revenues	23452	
9	Revenues	20000	

Filter your cards

We now have a simple multi card visual.



However, in our data, we had two scenarios: actuals and planned values. We cannot just use the Value column, because everything is in this column and we need to filter it.

We need to add another measure by right-clicking on the Fields selection pane and selecting **New measure**. Calculate the actuals by inputting in the following formula:

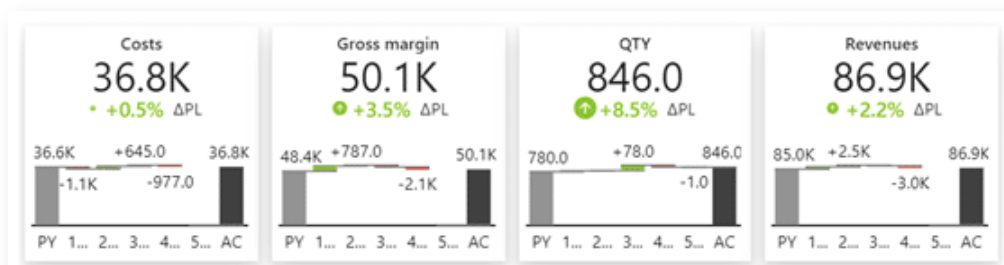
```
AC = CALCULATE(SUM(Table_webinar[Value]), Table_webinar[Scenario]="Actual")
```

```
AC = CALCULATE(SUM(Table_webinar[Value]),
Table_webinar[Scenario]="Actual")
```

Then add another measure for plan and input the following formula:

```
PL = CALCULATE(SUM(Table_webinar[Value]), Table_webinar[Scenario]="Plan")
```

Essentially, this filters the values that belong to either of the scenarios. Once you add both measures to the visual in the **Value** and **Plan** placeholders, you get a more insightful visualization that conveys much more information.

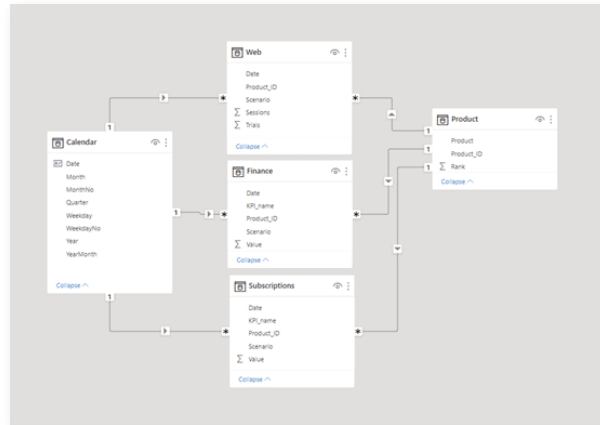


This is now a flexible dashboard you can work with. You could enter new data in Excel and any changes will be reflected in the Power BI visual after you refresh it.

Consolidate KPIs with Power Query - Example No. 2

The next example involves **multiple tables**, because in real life your KPIs are coming from multiple locations - it could be finance, CRM systems, supply chain, manufacturing, etc. The bottom line is you are working with multiple tables, each of them has some KPIs you want to **keep your eye on**.

In our example, we'll be working with web analytics, finance, and Subscription data.



Open power Query and open the **Finance** table. It is already unpivoted and has KPI dimensions and scenarios prepared. Next open the **Web** query, where you need to unpivot Trials and Sessions data. Select the first three columns, right-click on the heading and select **Unpivot other columns**.

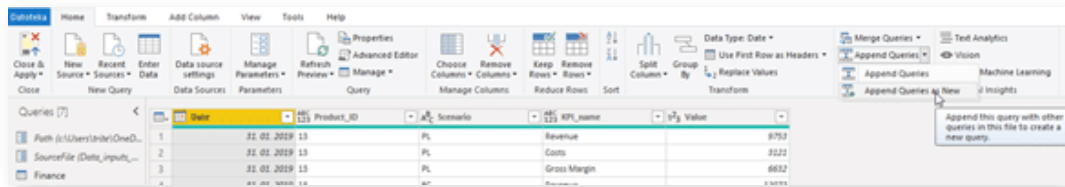
Date	Product_ID	Scenario	Sessions
1.01.2019	13	AC	0
1.01.2019	46	AC	0
1.01.2019	77	AC	0
2.01.2019	13	AC	65
2.01.2019	46	AC	144
2.01.2019	77	AC	73
3.01.2019	13	AC	152
3.01.2019	46	AC	48
3.01.2019	77	AC	23
4.01.2019	13	AC	403
4.01.2019	46	AC	96
4.01.2019	77	AC	142
5.01.2019	13	AC	115
5.01.2019	46	AC	81
5.01.2019	77	AC	46
6.01.2019	13	AC	221
6.01.2019	46	AC	24
6.01.2019	77	AC	17
7.01.2019	13	AC	17
7.01.2019	46	AC	144
7.01.2019	77	AC	154
7.01.2019	13	AC	67
8.01.2019	13	AC	504
8.01.2019	46	AC	14
8.01.2019	77	AC	448
8.01.2019	13	AC	224
9.01.2019	13	AC	2
9.01.2019	46	AC	65
9.01.2019	77	AC	448
9.01.2019	13	AC	256
10.01.2019	13	AC	14
10.01.2019	46	AC	446
10.01.2019	77	AC	480
10.10.2019	13	AC	11
10.10.2019	46	AC	286
10.10.2019	77	AC	174

We should also rename the Attribute column to **KPI_name**. Since we are trying to append several tables, their structure needs to be exactly the same. Everything needs to be the same: number of columns, the names, everything.

The last query - **Subscriptions** - has already been prepared.

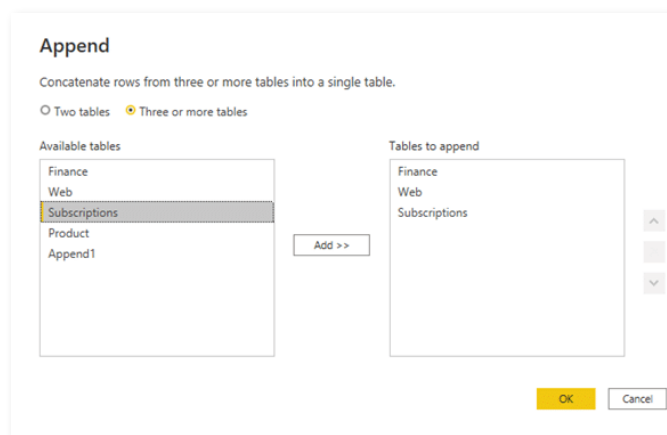
Appending the tables for KPIs consolidation

Open the **Finance** query and look for the Append Queries command.



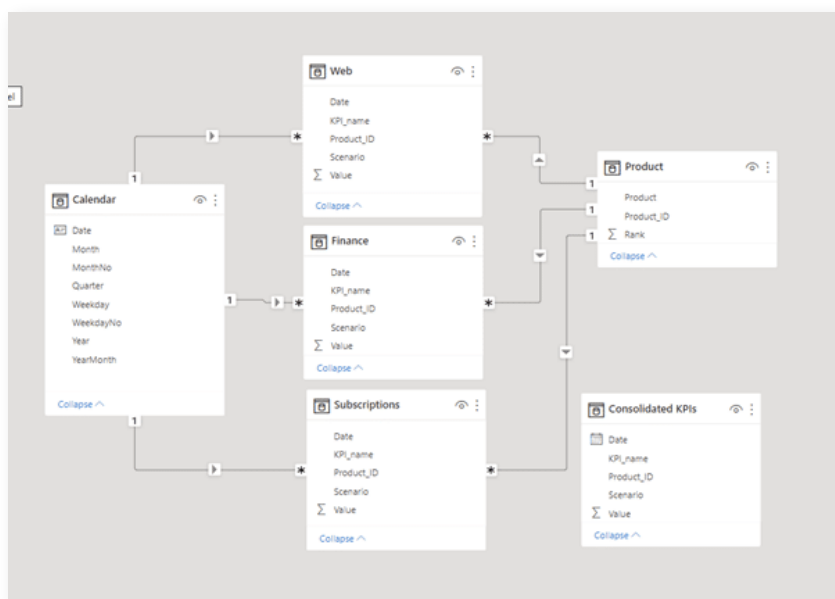
Select the **Append queries as a new** command, which will create another query with all the data. Select the **Three or more tables** radio button and then select all three queries you want to add.

The result is a table with all the KPIs in it: cost, gross margin, sessions and trials, and any other KPIs that might be in these tables.

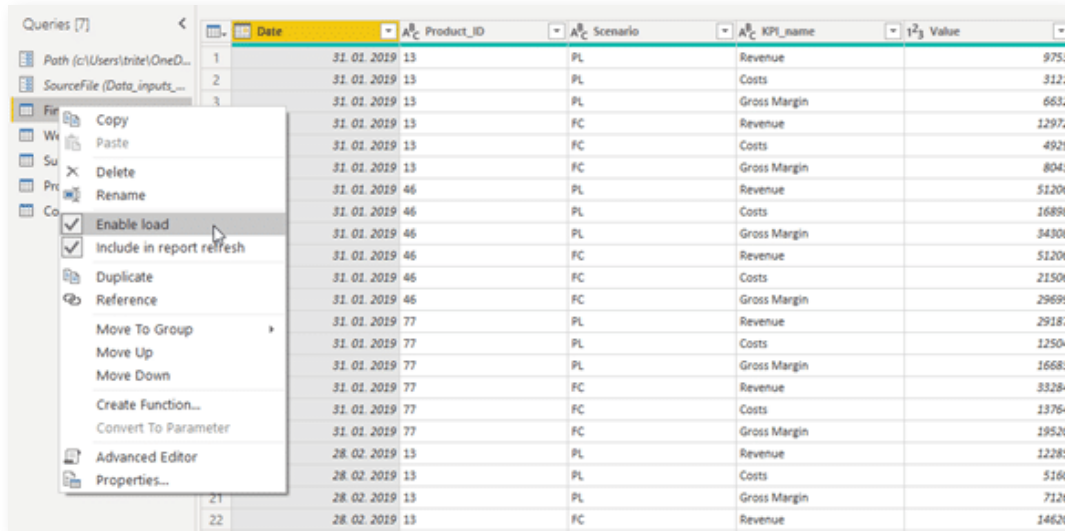


Simplifying your KPIs consolidation model

You have a new table in your model explorer and you essentially have duplicated data, since all data is in the Consolidated KPIs table as well as all others.

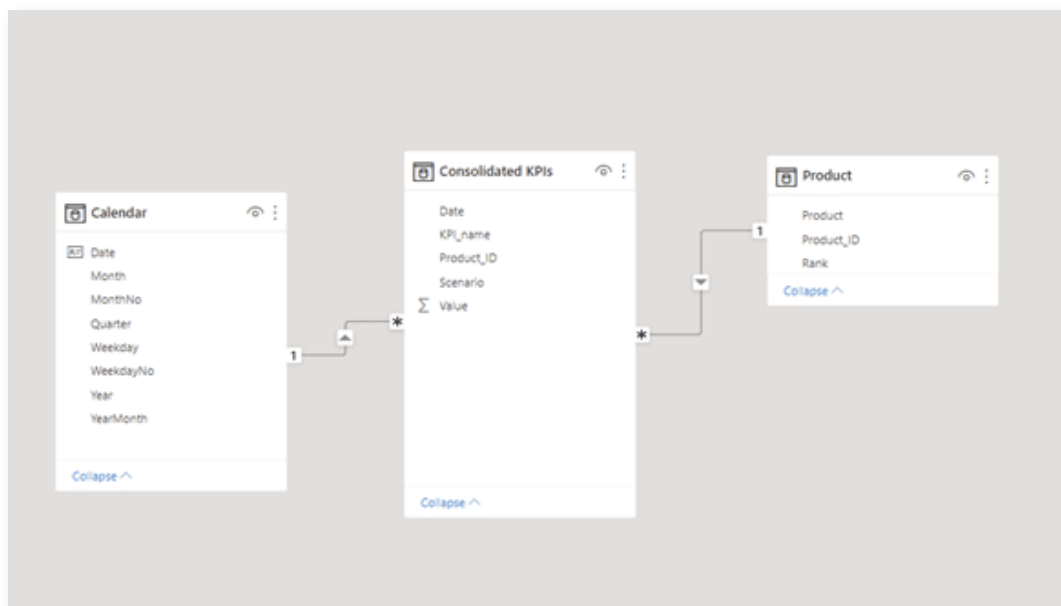


You should open Power Query again and disable the loading of data from all three tables making up the consolidated table. Right-click on the table name and deselect the **Enable load** option.



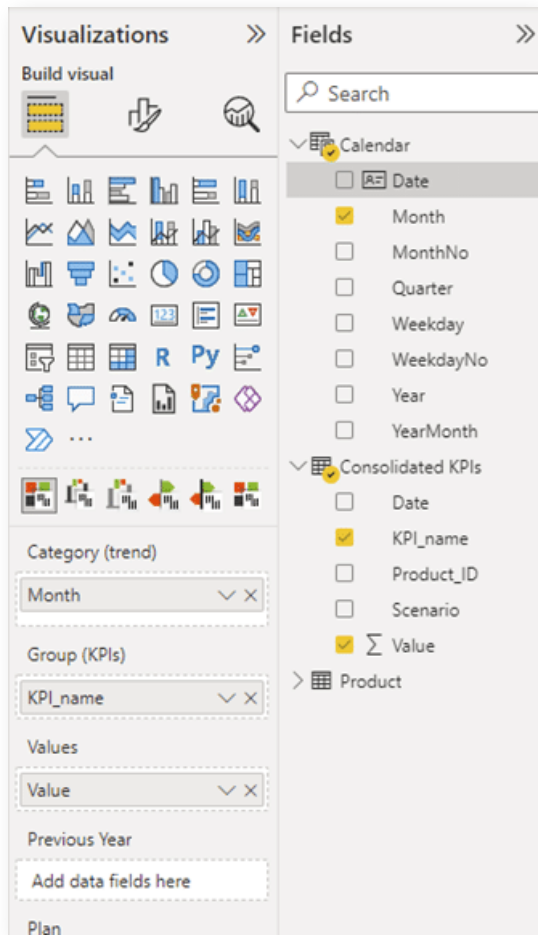
	Date	Product_ID	Scenario	KPI_name	Value
1	31. 01. 2019	13	PL	Revenue	9753
2	31. 01. 2019	13	PL	Costs	3121
3	31. 01. 2019	13	PL	Gross Margin	6632
	31. 01. 2019	13	FC	Revenue	12972
	31. 01. 2019	13	FC	Costs	4929
	31. 01. 2019	13	FC	Gross Margin	8043
	31. 01. 2019	46	PL	Revenue	51206
	31. 01. 2019	46	PL	Costs	16858
	31. 01. 2019	46	PL	Gross Margin	34308
	31. 01. 2019	46	FC	Revenue	51206
	31. 01. 2019	46	FC	Costs	21506
	31. 01. 2019	46	FC	Gross Margin	29699
	31. 01. 2019	77	PL	Revenue	29187
	31. 01. 2019	77	PL	Costs	12504
	31. 01. 2019	77	PL	Gross Margin	16683
	31. 01. 2019	77	FC	Revenue	33284
	31. 01. 2019	77	FC	Costs	13764
	31. 01. 2019	77	FC	Gross Margin	19520
	28. 02. 2019	13	PL	Revenue	12285
	28. 02. 2019	13	PL	Costs	5160
	28. 02. 2019	13	PL	Gross Margin	7126
	28. 02. 2019	13	FC	Revenue	14620

You are now left with just three tables. Create a relationship between **Calendar** and **Consolidated KPIs** table by dragging the **Date** value from one to the other. Also, create a relationship between the **Product ID** fields in **Product** and **Consolidated KPIs** tables.

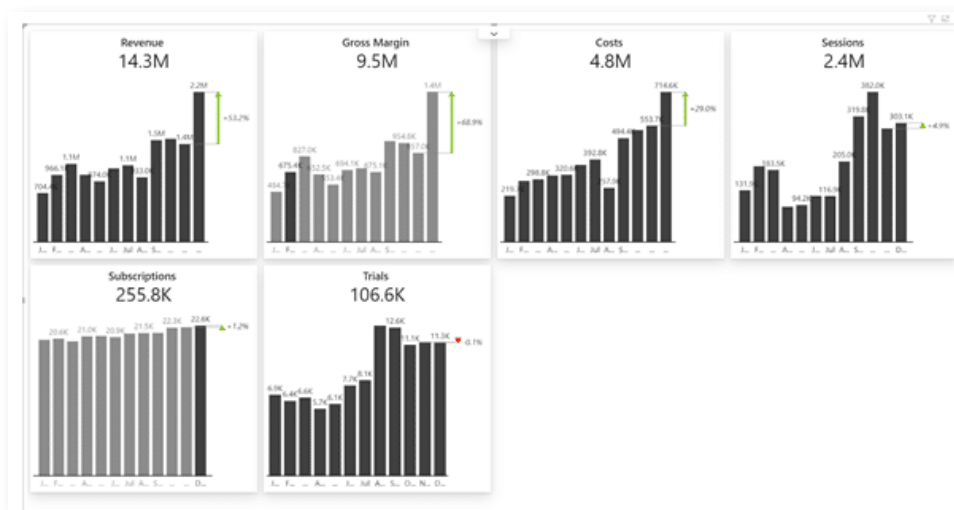


Testing it out

Return to the Design window and set up the values to their respective placeholders.



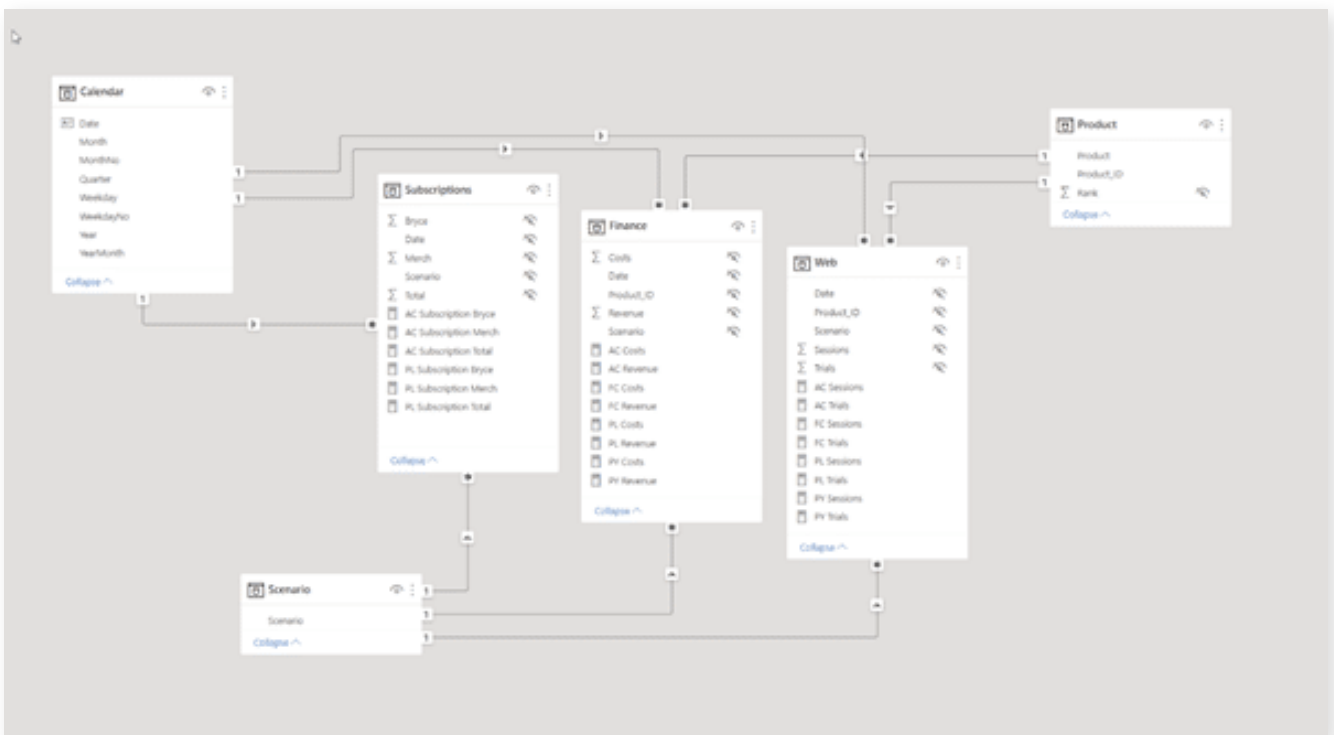
The final result shows your KPI values by month in a dynamic and flexible way.



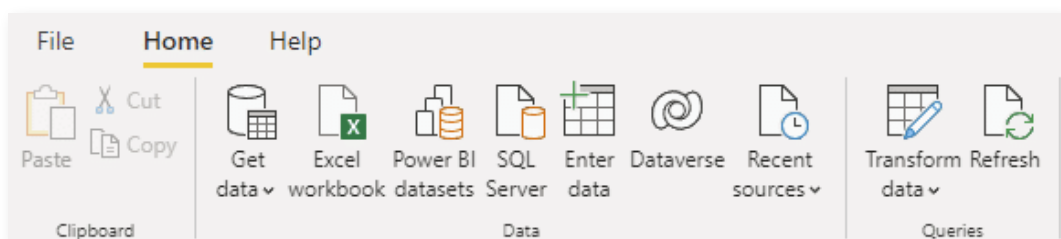
Using DAX for KPIs consolidation

Power Query is a powerful tool but it is not **truly universal**. You are much more likely to be in a situation where you simply cannot append all the tables together. You usually have **very different types of tables** and just want to collect certain KPIs from one table and then take another completely different table with three KPIs. In this case, you need to **pick your data from multiple tables and merge it** to consolidate KPIs.

Open the data model window in the example provided (**Cards_DataSetup_3_DAX.pbix**). Here you can see the three tables we'll be working with.

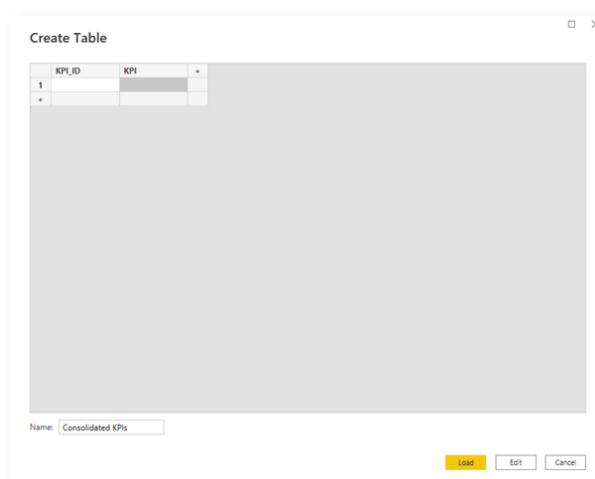


Create a new table for consolidating your KPIs by clicking on the **Enter data** button on your **Home** tab.



This opens the Create Table window, where you can name the columns for your new table. It will contain two columns: one with KPI IDs and the second with actual KPI names. This will be a simple list of all of the KPIs that you want to consolidate in your model.

The important thing is that you list all of the KPIs here. I also recommend that you add the ID column so that you have a number that you can use for sorting and everything else.



After you add them, load the table into Power BI. After it loads, just leave this table as it is without relating it to any other tables. This is what is called a disconnected table in Power BI.

Using the SWITCH command to consolidate KPIs

In the design view, we can start by creating a table showing all KPIs and their IDs. This is the starting point for getting the actual values for all KPIs. Since you have a lot of choices, you need to switch between all these options, and the DAX formula for that is called **SWITCH**.

Start by creating a new measure in the **Consolidate KPIs** table. Then add the following code:

```
AC = SWITCH(MIN('Consolidated KPIs'[KPI _ ID]),
```

This formula evaluates the KPI ID. It looks at the KPI ID and then returns the correct result. For KPI number 1, the formula should **return the revenue**, which is located in the Finance table. The KPI name in there is **AC revenue**.

```
1, [AC Revenue],
```

Next up is the revenue from merchandise. This is **not a separate KPI** located in a specific table. It is instead a KPI we **made up on the spot** and we can create on the fly using DAX formulas. That is why this is a good approach because it allows you to **calculate additional measures** and add them.

Essentially, we'll take the revenue from the Finance table and filter it by product by only taking values where product equals merch. Here's the formula:

```
2, CALCULATE([AC Revenue], 'Product' [Product]="Merch"),
```

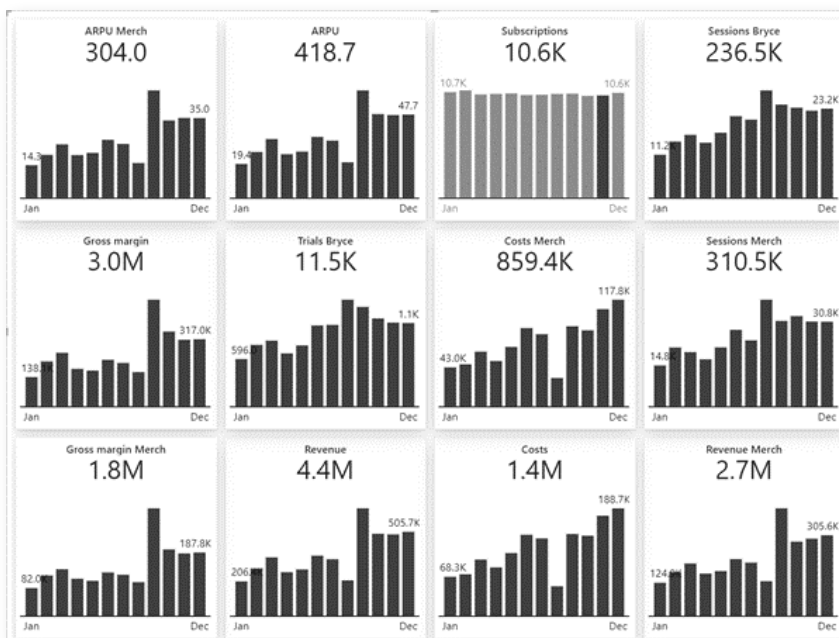
The next step is to do it for another product:

```
3, CALCULATE([AC Revenue], 'Product' [Product]="Bryce"),
```

Afterward, you can keep going and collect data from different tables and filter them based on your chosen criteria. The full code for this example can be found in the download package accompanying the webinar.

Putting it to work

After you have your formula, you can simply create a **Zebra BI Cards visual** and add your actuals and KPIs to get an **instant overview of your core KPIs**. Even better, you can add **the month dimension** to get a sense of how individual KPIs change over time.



What is even more powerful is that you can now create KPIs with cross calculations. Basically, you can take subscriptions that are in one table and your revenue and divide it by subscriptions to get the average revenue per subscriber.

The formula for calculating ARPU is the following:

```
16, Finance[AC Revenue] / Subscriptions[AC Subscription Total],
```

This takes the revenue from the Finance table and divides it by the AC Subscription total from the Subscriptions table.

You could do the same for plan data, which involves copying the formula for actuals and replacing all occurrences of AC with PL. You can do this easily by selecting the first occurrence of AC in the existing formula and pressing **CTRL + D** multiple times to select all occurrences. Then simply type PL to replace them all at once.

Once you add plans to your visual, you get an even better overview of what is going on in your business.



The power of consolidating your data

We looked at the three options you have to consolidate KPIs in Power BI in order to collect all the KPIs in one place and display them in one visual. This gives you power not just in terms of performance but also in terms of making truly interactive dashboards.

Consolidation will allow users to click on a KPI card to filter all the information on a dashboard. This ensures true flexibility and greatly improves the user-friendliness of your dashboard. Most importantly, your dashboard will enable actionable insights for making better decisions faster.

To learn more about presenting your KPIs using Zebra BI Cards, visit our [Knowledge Base⁴](#).

Appendix: Hyperlinks

1. **Zebra BI Templates:** <https://zebrabi.com/templates/>
2. **How to create a KPI dashboard in Power BI to make smarter decisions faster:** <https://zebrabi.com/create-the-best-kpi-dashboard/>
3. **Zebra BI Cards:** <https://zebrabi.com/power-bi-custom-visuals/cards/>
4. **Knowledge Base:** <https://help.zebrabi.com/category/259-zebra-bi-cards>

Interested? Try it yourself!

If you'd like to explore all our Power BI dashboard examples and templates, click on the button below and give Zebra BI a try for free!

