PowerExcel User Manual



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Topics

• Introduction to PowerExcel

 Creating Slices – PowerExcel Perspective, DB Functions, and Power Analyzer

• Working with Subsets

• PowerExcel for Planning: Entering Data in a Slice and Use of Drivers

Inserting Another Data Set in a PowerExcel Slice and
 Introduction to Range References

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PowerExcel User Manual

1. INTRODUCTION to PowerExcel

PowerExcel is a simple, powerful way for Excel users to connect to a highly efficient, collaborative business-modeling platform hosted in the cloud. That platform is available from <u>PARIS Technologies, Inc.</u>, the developer of PowerExcel.

With PowerExcel, users access data from a business model for all manner of reporting, analytics and planning: for example, financial reports, departmental budgets, sales forecasts. Users can also model *new* analytics and plan versions, creating limitless data views from a single spreadsheet.

All this can be done via the standard Microsoft Excel install that exists on virtually every business user's computer—so, as a user, you can experience PowerExcel simply by opening the tool you work with every day.

The only requirement is a **PowerExcel Add-In** to reach Cloud-based models. [Note that the following image shows a single user connecting to a PowerExcel Cloud Server through use of the PowerExcel Add-in; the PowerExcel Cloud Server is a multi-server configuration, as shown next page, at right, the "After" image.]



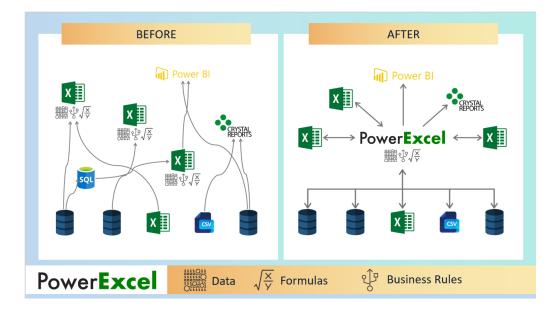
The business data resides on a **PowerExcel Cloud Server**—<u>PARIS Technologies</u> makes this Cloud Server available for teams to work far more efficiently than can be done with existing, overwhelmingly complex spreadsheet-only systems. Remote users from different locations, whether around the world, or simply using individual machines, will have the capability to work on separate Excel workbooks that are all connected to a shared model on the cloud server. With the PARIS PowerExcel Cloud Server, Excel is transformed into a dynamic access point for critical business decision-making.

If you have installed the PowerExcel Add-In, or have an interest in doing so, <u>contact</u> <u>PARIS Technologies to get underway with your own PowerExcel Starter Team</u>.

Power**Excel**

In the image below, the *Before* picture, at left, shows a typical scenario with proliferating spreadsheets. This represents the work done presently, by firms large and small, in spreadsheet-only models. *Without* PowerExcel, individual workbook(s) contain the entire business model(s)—a huge problem, because Excel becomes an unwieldy database itself, freighted with innumerable links, formulas, macros and the like. Spreadsheet models of this sort become literally too big to handle, much less keep free of frightening, potentially catastrophic errors.

As for sharing these spreadsheet-only models: often they make the rounds via email leading to multiple differing versions of the truth (a scary concept in itself). Or they are posted on a shared directory/site, which hardly solves the "overly burdened, frightening" spreadsheet issue.

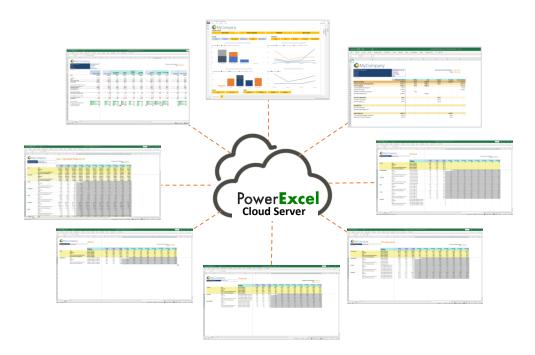


The *After* picture, at right, shows the PowerExcel Cloud Server in the middle. Business model(s) are accessible from the everyday spreadsheet...and, Yes, **Power BI** (and any other BI application) can be set up as another way to reach business data, in real time.

For leadership, PowerExcel provides the means to communicate a vision for the business and for staff to collaborate and act on that vision. In brief: leadership can see results dynamically, and—with responsive planning models in place—can control against objectives, in order to change business strategies as quickly as possible. PowerExcel solves these issues, and confers upon users and firms other benefits, so that you can:

- Seamlessly and dynamically share your data through the cloud
- See your numbers tick and tie from the start
- Use a Financial Data Repository that keeps multiple versions of your numbers straight
- Collaborate in critical department- or organization-wide efforts that concern reporting, analytics and planning

The following illustration shows an example of users collaborating on a shared model, whether via report views, planning (e.g., budget/forecast) templates or even charts and graphs—all via a "disburdened" everyday instance of Excel.





About this Manual

This manual is intended to give you a view into the main capabilities that users can perform while using PowerExcel—creating Slices, entering data in shared models, using the Dimension Editor (to create new components of the model), and building more complex reports.

An important note: the data shown here is from a representative financial model. While the exercises proceed in a logical chronological fashion, some of the data may not be the same from exercise to exercise. That said, with basic understanding of Excel and an inquisitiveness about how PowerExcel can be useful to you, we hope that you are inspired to investigate further, for a potential PowerExcel solution at your own firm!

PLEASE NOTE ALSO before proceeding

If you see the "@" Symbol in the Microsoft Excel Formula Bar

Microsoft recently changed the syntax for some formulas in Excel, adding an "implicit intersection operator" or "@" symbol. This new syntax is added automatically by Excel to some formulas. Microsoft has made these changes in the core of Excel and you may or may not be aware that this has happened.

PARIS Technologies, developer of PowerExcel and other advanced planning/ analytics/reporting products that feature dynamic spreadsheet connectivity, has responded to these recent changes in Microsoft Excel and has developed enhancements, allowing <u>PARIS products</u> to work with the new Microsoft changes to Excel.

Indeed, many of the functions that you see in use within this PowerExcel manual will now contain the "@" symbol. Although the screen grabs and the text describing these functions may not presently show the "@" symbol, they will work as described.

2. Working with Slices – PowerExcel Perspective, DB Functions, Power Analyzer

This section will describe the first step in using PowerExcel: how, through a standard spreadsheet, you can reach data that exists in a business model known as a Cube. The following describes how to establish a connection to a model, and the three methods used to create a Slice of business data, which will then allow a user to create a view of *any* desired data.

Important: This manual assumes that you have already installed and registered PowerExcel. If you have not done so, please review the **PowerExcel - Prerequisites. Installation, Registration** manual.

2.1 Establishing the PowerExcel Connection

Begin by creating a PowerExcel Connection in Excel. To do this:

1. Launch the Excel application and go to the **PowerExcel Tab** along the Excel ribbon.

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2. In the PowerExcel Connections control group, click the **Connections** icon (circled above).

Connection	15	×
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Name:		
URL:		
Database:		1
	Use Windows Authentication Default Connection	
	OK Cancel	

- 3. In the Connections dialog that appears, click **New** (red arrow in preceding image).
- In the Name field, enter the <name of the PowerExcel connection>.
 Note: You can provide any name for the connection; for this exercise
 PandA_2022_Connect is the PowerExcel connection name.
- 5. In the **URL** field, enter the <**correct URL**>. This URL will be the URL of the Server where the source PowerExcel database (Panda in this example) is currently running/opened.

Important: Typically you will be entering an **http:\\IP Address** to reach a Cloud-based Server provided by PARIS Technologies. (Note that the URL in the image below http:\\localhost:4387—is only an example.)

6. Click on the **Database drop-down** and select the correct source PowerExcel database. In this example, select **PandA_2022_Basic** as the source database.

Important: The source database must be opened on the specified Server in order for that database to be displayed when you click the Database drop-down button.

Connection	s		>
Connections:	PandA_2022_Connect		New Delete
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URL:	http://localhost:4387		
Database:	PandA_2022_Basic	~	
	Use Windows Authentication		
	Default Connection		
	OK	Cancel	

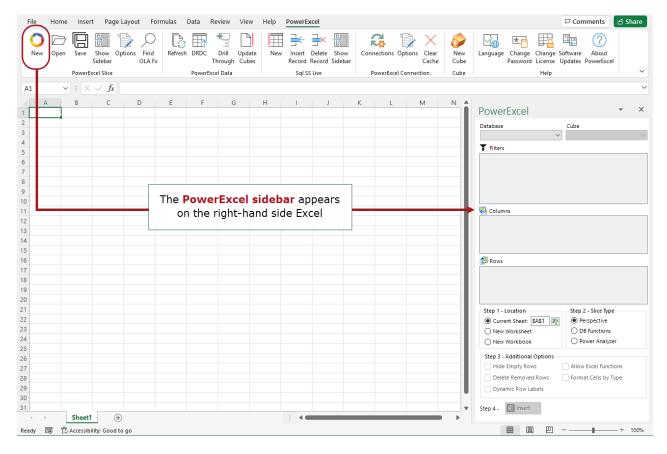
7. Click **OK**. The PowerExcel connection is now successfully created.

2.2 Creating a PowerExcel Slice

Important: Before we begin creating PowerExcel Slices, configure the PowerExcel Slice settings and enable the **Automatically display sidebar** option. This will help reduce the number of clicks needed to do to work with the PowerExcel sidebar.

TO DO THIS: Go to the **PowerExcel Addin Tab** of the Excel ribbon \rightarrow click the **Options icon** in the PowerExcel Slice control group \rightarrow check the **Automatically display sidebar** option in the Slice Options dialog \rightarrow Click **Save**.

1. In the **PowerExcel Tab** of the Excel ribbon, go to the PowerExcel Slice control group and click the **New** (Slice) icon. The PowerExcel sidebar will appear in the right-hand area of Excel. (The New icon and the sidebar are shown in the following image.)



- 2. Go to the **PowerExcel sidebar**; click on the **Database drop-down** and select the appropriate PowerExcel connection, e.g., **PandA_2022_Connect**.
- 3. **Note:** If you are trying to connect to a secured PowerExcel database, you will next be prompted to enter valid user credentials to access the database.

User Credentials	×
Login Username	
Password	
0K Cancel	

If you are connecting to a non-secured database, you will not be prompted for User Credentials. Just proceed to selecting the Cube.

 Still in the PowerExcel sidebar, click on the Cube drop-down and select the appropriate Cube, e.g., Financial Data. The PowerExcel sidebar will appear as follows, with the selected Database and Cube,

circled in the following image:

File Home Insert Page New Open Save Show O Sidebar PowerExcel Slice	Diptions Find OLA Fx			onnections Options Clear Cache PowerExcel Connection	Comments Share
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You may re-arrange the Dimensions by dragging and dropping them among the Filters, Columns and Rows sections, and you may also select specific Members to display. We will demonstrate this shortly; for now, we will create a Slice with the default Dimension and Member selections, and follow the Steps (1 through 4) shown at the bottom half of the PowerExcel sidebar (also circled in the image above).

<u>Step 1:</u> Select where you want to generate the PowerExcel report into the spreadsheet. In this example, choose to insert into the **Current Sheet** starting at cell **A1**. (See selection for Current Worksheet and Location circled in the preceding image.)

<u>Step 2:</u> Pick a PowerExcel Slice Type by enabling the correct radio button. You can select **Perspective**, **DB Functions, or Power Analyzer**. We will elaborate on these options in the succeeding topics. For now, select **Perspective**.

<u>Step 3:</u> Enable any of the available selected **Additional Options**. In this case, keep only **Format Cells by Type**.

<u>Step 4:</u> Click the **Insert** button. The PowerExcel Slice will look as follows (after a moment, the sidebar disappears):

Fil	File Home Insert Page Layout Formulas Data Review View Help PowerExcel																
1	New Ope	n Save	Show Op Sidebar	tions Find OLA F			Drill Upd	ate Nev		Delete Sho Record Side	w Conr	ections Op	tions Clear Cache		O Help		
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13 V	/ersion	144	0	0	All	All	All	All	All	All	All	All	All	All	All	All	0
14 U	Inits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 F	rice	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 C	Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 B	Revenue	6735806	0	0	595434.2	595434.2	595434.2	595434.2	595434.2	547662.1	547662.1	532662.1	532662.1	532662.1	532662.1	532662.1	595434.2
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19 0	Gross Prof	3321778	0	0	295697.7	295697.7	295697.7	295697.7	295697.7	274041.4	274041.4	259041.4	259041.4	259041.4	259041.4	259041.4	295697.7
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24 S	ales and	205251.3	0	0	17051.27	17051.27	17051.27	17051.27	17051.27	17142.13	17142.13	17142.13	17142.13	17142.13	17142.13	17142.13	17051.27
	oftware	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
26 S	oftware	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 S	oftware	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 C	epreciat	110143.3	0	0	10348.48	10348.48	10348.48	10348.48	10348.48	8342.98	8342.98	8342.98	8342.98	8342.98	8342.98	8342.98	10348.48
		81844.14	0	0	6935.46	6935.46	6935.46	6935.46	6935.46						6738.12		6935.46
30 A	dministr	68515.61	0	0	5995.66	5995.66	5995.66	5995.66	5995.66	5505.33	5505.33	5505.33	5505.33	5505.33	5505.33	5505.33	5995.66
		29652.48	0	0	2326.98	2324.74	2324.74	2324.74			2575.22	2575.22	2575.22	2575.22	2575.22		2326.98
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[NOTE: the data you see in the cells may differ, depending on the database that is used for these example steps.]

At this point you have demonstrated making a Connection to a PowerExcel database and testing how to create an example Slice.

2.3 Using PowerExcel Perspective Slice Type and Reconfiguring a Slice

As mentioned previously, you can re-arrange a Slice by dragging and dropping Dimensions to the Filters, Columns and Rows boxes. You can also select the preferred 'Display Member' for those Dimensions within the Filters (Page Members). Likewise, you can select a specific set of Members to be displayed along the Columns and Rows.

Note: for the ensuing pages, **PowerExcel Perspective** is the Slice Type that is used to bring data into Excel. The **DB Functions** and **Analyzer** Slice Types will be explored in subsequent pages.

Important: Given that you set the option to **Automatically display sidebar**, it will appear when you click on a cell that contains either the OLAPivotTable (which is the operative function for the **Perspective** Slice Type) or the OLATableMember function, shown by the arrow and boxed, respectively, in the below image.

Also, note that the Insert button is replaced by an **UPDATE** button.

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13	Versio	٦	144	0		0 All	All	All	All	All	All	All A			
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18	Cost of	Sa 34	14028	0		0 299736.5	299736.5	299736.5	299736.5	299736.5	273620.8	273620.8			
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	Sales a		5251.3	0		0 17051.27			17051.27				New Workbook	O Power Analy	zer
	Softwa		0	0		0 0			0	0	0	_	Step 3 - Additional Option		
	Softwa		0	0		0 0						0	Hide Empty Rows	Allow Excel Fund	rtions
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Rea	idy Cal	culate		🏷 Accessibi		o go									

To reconfigure the PowerExcel Slice shown previously:

1. Change the position of Dimensions within the Slice.

To do this:

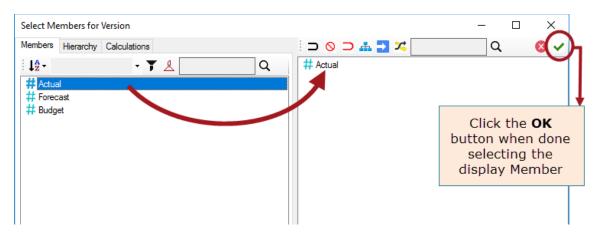
- In the PowerExcel sidebar, drag and drop the **Month** dimension from the Columns to the **Filters**.
- Next, drag and drop the **Year** dimension from the Filters to the **Columns**.
- Click the **Update button**. The Slice will look as follows:

File Ho	me Inse	rt Pagel	.ayout F	ormulas	Data Revie	w View	Help	PowerEx	cel		1		Comments	🖻 Shar
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K29	• : ×	√ <i>f</i> x												
А	В	С	D	E	F	G	Н	1	J	K	÷			
Database:	PandA_2	22_Conne	ct								PowerExce			*
Cube:	Financial	Data									Database		Cube	
Dimensio	Filter	Version	Members	All							PandA 2022 Conn	iect v		
	Filter	Entity	Members	All							T Filters			
	Filter	Departme	Members	All										
	Filter	Account	Members	All								All All		
	Column	Year	Range	\$B\$11:\$F\$	11						¹ ∠ Department:			
	Row	Month	Range	\$A\$12:\$A\$	45							All		
OLAPivot	lable													
	All	2019	2020	2021	2022						Columns			
All	11964582	4406219	4528377	3029831	156						14 Year: All,2019	,2020,2021,20	022	
Method	0	0	0	0	0									
Amount	0	0	0	0	0									
j Jan	1051415	367171.9	377354	306889.3	0									
Feb	1051685	367171.9	377351.5	307161.1	0						🚰 Rows			
Mar	1051639	367171.9	377351.5	307115.8	0						^亿 Month: All,M	ethod,Amou	nt, Jan, Feb, Mar, Apr, 1	May, Jun, Jul,
Apr	1051594	367171.9	377351.5	307070.5	0									
May	1051413	367171.9	377351.5	306889.3	0									
Jun	968772	367171.9	377351.5	224248.6	0						<			
Jul	968681.4	367171.9	377351.5	224158	0						Step 1 - Location		Step 2 - Slice Ty	pe
Aug	954132.4	367171.9	377351.5	209608.9	0						Current Sheet	\$A\$1 🎽	Perspective	
Sep	953951.2	367171.9	377351.5	209427.8	0						O New Workshe		DB Function	IS
Oct	953860.6	367171.9	377351.5	209337.2	0						New Workboo	ok	O Power Anal	yzer
Nov	953498.2	367171.9	377351.5	208974.8	0						<u> </u>			
Dec	953317	367171.9	377351.5	208793.6	0						Step 3 - Addition		_	
YTD Jan	1051415	367171.9	377354	306889.3	0						Hide Empty R	ows	Allow Excel Fun	ctions
YTD Feb	2103100	734343.8	754705.5	614050.4	0						Delete Remov	ed Rows	Format Cells by	Туре
YTD Mar	3154739	1101516	1132057	921166.3	0						Dynamic Row	Labels		
YTD Apr	4206333	1468688	1509409	1228237	0									
YTD May	5257746	1835859	1886760	1535126	0						Step 4 - 🔲 Upda	ate		
VTD lun	6226518 Sheet	-	2264112	1759375	n	: 4					•			
		ility: Good to										■□□		

2. Change the Display Member of Dimensions in Filters.

Next, we will change the display Member of one Dimension (*Version*) in the Filters section of the PowerExcel sidebar. For this we want to see only *Actual* data showing. To change the display Member in the Filters section:

- Double-click on the **Version** dimension; in the Select Members dialog that appears, delete the **ALL** member displayed on the right-hand pane; then drag and drop the **Actual** member from the left-hand pane to the right-hand pane.
- Click the **green checkmark icon** (OK button) located the top right-hand corner of the dialog. (See the following screen images.)



• Back in the PowerExcel sidebar, notice that the *Version* dimension now shows *Actual* as the display Member.

PowerExcel			~ >
Database		Cube	
PandA_2022_Connec	t v	Financial Data	~
T Filters			
Version: Act	tual		
년 Entity: All			
ゼ Department: All			
ビ Account: All			
🔁 Columns			
12 Year: All, 2019, 20	20,2021,202	2	
🚰 Rows			
4 Month: All,Meth	iod,Amount	Jan, Feb, Mar, Apr,	.May,Jun,Jul,Au
<			>

• In the PowerExcel sidebar, click the **Update** button. This updates the PowerExcel Slice values to show *Actual* data.

Power**Excel**

F	ile Hoi	me Inser	t Pagel	ayout Fo	ormulas	Data F	Review	View	Help	PowerEx	cel	🖓 Comn	nents	🖻 Share
	O C New Op	en Save	Show Op Sidebar	tions Find OLA F	Refresh		Drill Through	Update Cubes	© SqI SS Live ∽	Power Connec		New Cube	O Help ~	
		PowerE	ccel Slice			PowerEx	cel Data					Cube		~
A	1	▼ : ×	$\sqrt{f_x}$											`
	А	В	С	D	E	F	G		Н	1	J	K		L
1		PandA_20			_		_				-			_
2 Cube: Financial Data														
3	Actual is now displayed													
4		Filter	Entity	Members	All				in the	e sprea	adshe	et		
5		Filter	Departme	Members	All									
6		Filter		Members										
7		Column	Year	Range	\$B\$11:\$F\$	11								
8		Row	Month	Range	\$A\$12:\$A\$	45								
9														
10	OLAPivot ⁻	Table												
11		All	2019	2020	2021	2022								
12	All	3791237	1272449	1348057	1170678	5	2							
13	Method	0	0	0	0		0							
14	Amount	0	0	0	0		0							
15	Jan	315920.2	106033.1	112334.9	97552.17		0							
16	Feb	315919	106033.1	112333.7			0							
17	Mar	315919	106033.1	112333.7			0							
18	Apr	315919	106033.1				0							
19	May	315919	106033.1				0							
20	Jun	315919					0							
21	Jul	315919		112333.7			0							
	Aug	315919		112333.7			0							
	Sep	315919		112333.7			0							
24	Oct	315919					0							
25	Nov	315919	106033.1				0							
/6	Dec	315919 Sheet1	-	112333.7	97552.17		n		1.44					
Rea	idy 💽	ోసి Accessibi	lity: Good to) go					ŧ		巴		<u> </u>	- + 100%

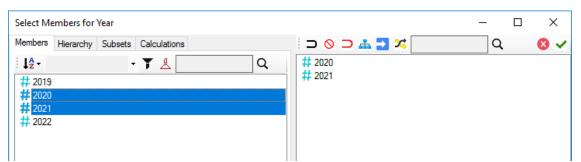
3. Change the Display Members of Dimensions in Rows or Columns. Next, we will change the display Members in both Rows and Columns.

We will begin by changing Members along the Columns so that it only shows data for years 2020 and 2021.

To change the display Members in the Columns section:

• Go to the Columns section and double-click on the **Year** dimension; in the Select Members dialog that appears delete the Members displayed on the right-hand pane; then drag and drop the correct Members (**2020** and **2021**) from the left-hand pane to the right-hand pane, as shown in the next image.

Power**Excel**



• Click the green checkmark icon (OK button) located the top right-hand corner of the dialog.

Back in the PowerExcel sidebar, notice that it now only display the years 2020 and 2021.

PowerExcel	- ×
본 Department: All 본 Account: All	,
Columns	
🔀 Year: 2020,2021	
🚰 Rows	
C Month: All,Method,Amount,	Jan, Feb, Mar, Apr, May, Jun, Jul, Au
Step 1 - Location	Step 2 - Slice Type
🖲 Current Sheet: 👫 🎇	Perspective
O New Worksheet	O DB Functions
🔘 New Workbook	O Power Analyzer

Next, let us move **Month** to the Filter box, and **Account** to Rows, and make selections so that only individual Income Statement accounts appear (those in the following chart).

Sales of Goods	
Sales of Services	
Revenue	
Cost of Goods	
Cost of Services	
Cost of Sales	
Gross Profit	
Gross Profit %	
Payroll and related expenses	
Distribution	
Occupancy Expenses	
Research and Development	
Sales and Marketing	
Depreciation	
Amortization	
Administrative Expenses	

Other operating Expenses (Income) Operating Expense Operating Expense % Operating Profit **Operating Profit %** Other Revenue Other (Expense) Other Income (Expense) EBIT Interest Revenue Interest (Expense) Interest Profit Before Tax Income Tax Expense **Profit After Tax**

To change the display Members in the Rows section:

- Go to the Rows section and double-click on the **Account** dimension; in the Select Members dialog that appears delete the Members displayed on the right-hand pane; then drag and drop the correct Members (see list above) from the left-hand pane to the right-hand pane.
- Click the green checkmark icon (OK button) located the top right-hand corner of the dialog.

Select Members for Account	- 0	×
Members Hierarchy Subsets Calculations	🗆 🛇 ⊃ 🚠 🔁 🛪 📃 🔍	8 🗸
Image: system in the syste	<pre># Sales of Goods # Sales of Services \$ Revenue # Cost of Goods # Cost of Goods # Cost of Services \$ Cost of Sales \$ Gross Profit # Gross Profit % # Payroll and related expenses # Distribution # Occupancy Expenses # Research and Development # Sales and Marketing # Depreciation # Administrative Expenses # Other operating Expenses (Income) \$ Operating Expense % Operating Expense % Operating Profit # Operating Profit # Other Revenue # Other Revenue # Other (Expense) \$ Other Income (Expense) } </pre>	

• In the PowerExcel sidebar, click the **Update** button. This updates the PowerExcel Slice.

You now have a basic comparative Income Statement report as shown below: **Note:** Notice that now the PowerExcel Slice only shows the years 2020 and 2021 along the columns (highlighted in purple in columns B and C), while only the select Income Statement accounts appear along the rows (highlighted in yellow in rows 12 to 42).

Power**Excel**

F	ile Home Ins	ert Page Layout	Formulas Dat	a Reviev	v View Help	PowerExcel
	2 · [🖭 🐰	Calibri	↓ 11 ↓ Ξ	= = 8	8 %	🔛 Conditional Formatting ~ 🔛 🔎
					70 V Number	
	Paste	_			Number	Format as Table ~ Cells Editing Analyze
	~ 🞺	🗄 🖌 🖉 🗸	<u>A</u> ~ <u>F</u>	≝ ∛~~	~	😿 Cell Styles 🗸 🦷 🗡 Data
	Undo Clipboard	r⊴ Font	Fa /	Alignment	L2	Styles Analysis
1	10 - :)	× √ <i>fx</i> =@0L	APivotTable(\$B\$1	,\$B\$2,\$B\$3	:\$E\$3,\$B\$7:\$E\$7	,\$B\$4:\$E\$4,\$B\$5:\$E\$5,\$B\$6:\$E\$6,\$B\$8:\$E\$8,\$B\$12,FALSE,F/
1	А	В	С	D	E	
	Database:	PandA_2022	2_Connect			PowerExcel •
	Cube:	Financial Da	ta			Database Cube
;	Dimensions:	Filter	Version	Members	Actual	PandA_2022_Connect V Financial Data
		Filter	Entity	Members	All	▼ Filters
		Filter	Department	Members	All	
;		Filter	Month	Members	All	12 Version: Actual 12 Entity: All
7		Column	Year	Range	\$B\$11:\$C\$11	L' Department: All
3		Row	Account	Range	\$A\$12:\$A\$42	L'A Month: All
0	OLAPivotTable					
1		2020	2021			Columns
2	Sales of Goods	5995:				12: Year: 2020,2021
3	Sales of Services	2385				
4	Revenue	8380				
5	Cost of Goods	2776	309282	2		
6	Cost of Services	1012	80 4107	'		Rows
7	Cost of Sales	3789				Account: Sales of Goods, Sales of Services, Revenue,
8	Gross Profit	45913				
9	Gross Profit %	0.5478235				
0	Payroll and relate					<
1	Distribution	12811				Step 1 - Location Step 2 - Slice Type
2	Occupancy Expense					Current Sheet: \$A\$1 Perspective
3	Research and Dev					O New Worksheet O DB Functions
4	Sales and Marketin	-				New Workbook Power Analyzer
5	Depreciation	9373.0				Step 3 - Additional Options
6	Amortization	756.4				Hide Empty Rows Allow Excel Functions
7	Administrative Ex					
8	Other operating E					Delete Removed Rows Format Cells by Type
9	Operating Expense					Dynamic Row Labels
0	Operating Expense					
	Operating Profit	301514.				Step 4 - 🔲 Update
	Operating Profit %					
	Other Revenue	54				
	Other (Expense)	120				
	Other Income (Exp					
	EBIT	305774.				
	Interest Revenue	1048				
	Interest (Expense)					
	Interest	707.5				
0	Profit Before Tax	306482.				
	Income Tax Expen	se -31662.53	-39185.6821	•		•
	Profit After Tax	274819.7	266868.6419			

4. Insert blank Rows or Columns.

You can also configure your PowerExcel Slice to include blank rows or columns, so that when you generate the PowerExcel Slice it automatically includes those blank rows or columns in the desired areas of the Slice.

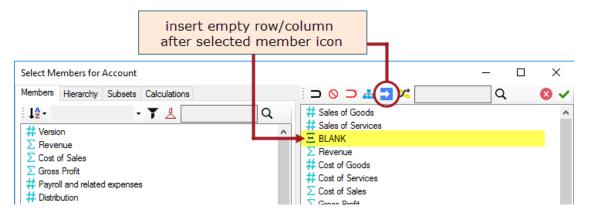
For example, let us format this sample Comparative Income Statement report to include blank rows between specific accounts as follows: To insert Empty Row:

• Go to the Rows section of the PowerExcel sidebar and double-click on the **Account** dimension.

You can insert blank or empty rows/columns by using the Insert empty

row/column after selected member button \rightarrow along the upper right-hand pane of the Select Members dialog. This will insert an empty row or column (see 'BLANK' highlighted in yellow in the succeeding image) right after the currently selected Member.

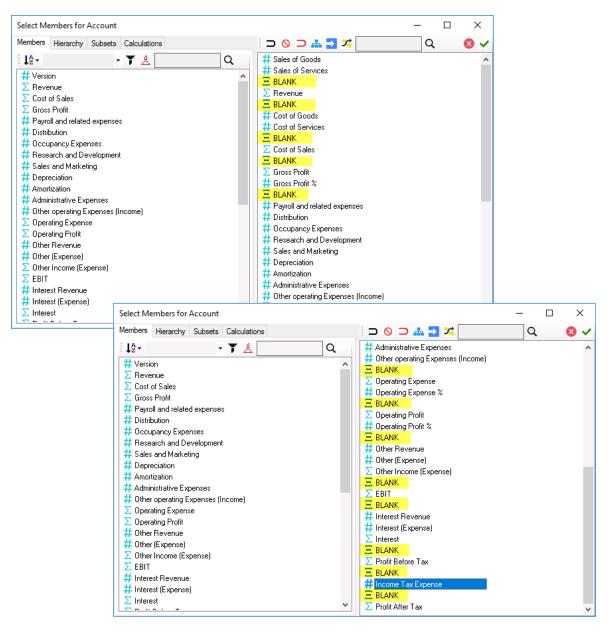
You can also reposition the empty rows/column by dragging and dropping them before or after any Member.



• In the Select Members dialog, identify in what area you want to insert an empty row, select a Member directly above that area and click on the Insert empty row/column icon.

As in the example above, to put a blank row between *Sales of Services* account and *Revenue*, select **Sales of Services** account then click the **Insert empty row/column icon**.

• Follow the same procedure and insert empty rows as shown in the screenshot below:



- Click the **green checkmark icon** (OK button) located the top right-hand corner of the dialog.
- In the PowerExcel sidebar, click the **Update** button. This updates the PowerExcel Slice.

You now have a basic comparative Income Statement report as shown below:

	A	В	С	D	E	F	
1	Database:	PandA_2022_0	Connect				
2	Cube:	Financial Data					
3	Dimensions:	Filter	Version	Members	Actual		
4		Filter	Entity	Members	All		
5		Filter	Department	Members	All		
6		Filter	Month	Members	All		
7		Column	Year	Range	\$B\$11:\$C\$11		
8		Row	Account	Range	\$A\$12:\$A\$54		
9							
10	OLAPivotTable						
11		2020	2021				
12	Sales of Goods	599520	705564				
13	Sales of Services	238560	47701.2				
14							
15	Revenue	838080	753265.2				
16							
17	Cost of Goods	277680	309282				
18	Cost of Services	101280					
19							
20	Cost of Sales	378960	313389				
21							
22	Gross Profit	459120	439876.2				
23	Gross Profit %	0.547823597					
24							
	Payroll and related exper	62517.6	55850.4				
	Distribution	12811.2	15508.8				
	Occupancy Expenses	21336					
	Research and Developme		5616.6				
29		31737.6	-1090.404				
30	-	9373.68	24066				
31	Amortization	756.48					
32		5886					
33	Other operating Expense	529.12	-3005.76				
34	other operating expense	525.12	5005.70				
35	Operating Expense	157605.28	138461.676				
36		0.188055174	0.18381531				
37	operating expense //	0.1000001/4	0.10001001				
38	Operating Profit	301514.72	301414.524				
39		0.359768423					
	Other Revenue	5460					
40 41	Other (Expense)	1200	1500				
42	Other Income (Expense)	4260	4151.4				
43	meenie (expense)	4200	-101.4				
	EBIT	305774.72	305565.924				
45							
	Interest Revenue	1048.8	1269.84				
47		-341.28					
	Interest	707.52					
49							
	Profit Before Tax	306482.24	306054.324				
51							
	Income Tax Expense	-31662.512	-39185.6821				
53							
	Profit After Tax	274819.728	266868.6419				
		2	2000000010				

5. Nesting Dimensions.

Let us further customize our Income Statement report. This time, we will 'Nest' (aka 'Stack') Dimensions along the columns to display both **Year** and **Month** dimensions along the columns.

Power**Excel**

- Since we already have the *Year* dimension displayed along the columns (showing both years 2020 and 2021) and, assuming we want to show the individual months below the years, we will need to drag and drop the **Month** dimension from the Filters section to the **Columns** section and place **Month** below **Year**.
- Change the display Members of *Month* to only show individual months *January* to *December*.

PowerExcel	~ X
Database	Cube
PandA_2022_Connect ~	Financial Data 🗸 🗸 🗸
T Filters	
ゼ: Version: Actual ゼ: Entity: All ゼ: Department: All	
🔁 Columns	
12, Year: 2020,2021	
🕍 Month: Jan, Feb, Mar, Apr, Ma	y, Jun, Jul, Aug, Sep, Oct, Nov, Dec
🚰 Rows	
¹ ² Account: Sales of Goods,Sal	les of Services,,Revenue,,Cost of 🤅
<	>

 Notice in the Rows section where blank Members were inserted, they appear as follows:

🛃 Columns	
14 Year: 202	20,2021
🔄 Month: Jan	, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec
🚰 Rows	
¹ 4 Account: Sa	ales of Goods, Sales of Services <mark>,,</mark> Revenue <mark>,, C</mark> ost of 🤅
	A A A
	T T
<	The appearance of double commas, as
	shown highlighted in vellow in the
	image above, indicates that a BLANK
	MEMBER has been inserted between
	these two commas.
	theore the commute

• Click the **Update** button.

The PowerExcel Slice will look as follows, with *columns B to M* showing *Income Statement* data for the year 2020 (highlighted in yellow); while columns N to Y showing *Income Statement* data for the year 2021 (highlighted in purple).

	A	в	с	D	Е	F	G	н	I.	J	к	L	м	N	0	P	Q	в	s	т	U	٧	V	×	Y
1	Database:	PandA_2022	2_Conne	ot																					
2	Cube:	Financial Da	ta																						
3	Dimensions:	Filter	Version	Members	Actual																				
4		Filter		Members																					
5		Filter	Departm	Members																					
6		Column1	Year	Range	\$B\$11:\$'y	'\$11																			
7		Column2			\$B\$12:\$																				
8		Row	Account	Range	\$A\$13:\$/	\\$ 54																			
9																									
10	OLAPivotTable																								
11		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020		2021		2021	2021	2021	2021	2021	2021	2021	2021		2021
12		Jan		Mar	Apr	May	Jun	Jul	Aug		Oct		Deo	Jan		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct		Dec
	Sales of Goods	49960	49960		49960	49960	49960	49960	49960	49960	49960		49960	58797			58797	58797	58797	58797	58797	58797	58797		
	Sales of Services	19880	19880	19880	19880	19880	19880	19880	19880	19880	19880	19880	19880	3975.1	3975.1	3975.1	3975.1	3975.1	3975.1	3975.1	3975.1	3975.1	3975.1	3975.1	3975.1
15																									
16	Revenue	69840	69840	69840	69840	69840	69840	69840	69840	69840	69840	69840	69840	62772	62772	62772	62772	62772	62772	62772	62772	62772	62772	62772	62772
17																									
	Cost of Goods	23140	23140			23140	23140	23140	23140	23140	23140		23140	25774				25774				25774	25774		
19	Cost of Services	8440	8440	8440	8440	8440	8440	8440	8440	8440	8440	8440	8440	342.25	342.25	342.25	342.25	342.25	342.25	342.25	342.25	342.25	342.25	342.25	342.25
20																									
21	Cost of Sales	31580	31580	31580	31580	31580	31580	31580	31580	31580	31580	31580	31580	26116	26116	26116	26116	26116	26116	26116	26116	26116	26116	26116	26116
22																									
	Gross Profit	38260	38260	38260	38260	38260	38260	38260	38260	38260	38260	38260	38260	36656			36656	36656	36656	36656	36656	36656	36656		36656
24	Gross Profit %	0.5478236	0.5478	0.5478	0.5478	0.5478	0.5478	0.5478	0.5478	0.5478	0.5478	0.5478	0.5478	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584	0.584
25																									
	Payroll and related expen	5209.8	5209.8	5209.8	5209.8	5209.8	5209.8	5209.8	5209.8	5209.8	5209.8	5209.8	5209.8	4654.2	4654.2	4654.2		4654.2	4654.2	4654.2	4654.2	4654.2	4654.2	4654.2	
	Distribution	1067.6	1067.6	1067.6	1067.6	1067.6	1067.6	1067.6	1067.6	1067.6	1067.6	1067.6	1067.6	1292.4	1292.4	1292.4	1292.4	1292.4	1292.4	1292.4	1292.4	1292.4	1292.4		
	Occupancy Expenses	1778	1778	1778	1778	1778	1778	1778	1778	1778	1778		1778	2772			2772	2772		2772		2772	2772		
	Research and Developm	1054.8				1054.8	1054.8	1054.8	1054.8	1054.8	1054.8														
	Sales and Marketing	2644.8				2644.8	2644.8	2644.8	2644.8	2644.8	2644.8				-90.87		-90.87	-90.87	-90.87	-90.87		-90.87	-90.87		
	Depreciation	781.14	781.14	781.14	781.14	781.14	781.14	781.14	781.14	781.14	781.14	781.14	781.14	2005.5	2005.5			2005.5				2005.5	2005.5		
	Amortization	63.04	63.04	63.04	63.04	63.04	63.04	63.04	63.04	63.04	63.04	63.04	63.04	197.34	197.34			197.34		197.34		197.34	197.34		
	Administrative Expenses	490.5				490.5	490.5		490.5	490.5	490.5	490.5	490.5												
34	Other operating Expense:	45.12	44	44	44	44	44	44	44	44	44	44	44	-250.5	-250.5	-250.5	-250.5	-250.5	-250.5	-250.5	-250.5	-250.5	-250.5	-250.5	-250.5
35																									
	Operating Expense	13134.8		13134	13134	13134	13134	13134	13134	13134	13134	13134	13134	11538	11538	11538	11538	11538	11538	11538	11538	11538	11538		
37	Operating Expense %	0.1880699	0.1881	0.1881	0.1881	0.1881	0.1881	0.1881	0.1881	0.1881	0.1881	0.1881	0.1881	0.1838	0.1838	0.1838	0.1838	0.1838	0.1838	0.1838	0.1838	0.1838	0.1838	0.1838	0.1838
38																									
39	Operating Profit	25125.2	25126	25126	25126	25126	25126	25126	25126	25126	25126	25126	25126	25118	25118	25118	25118	25118	25118	25118	25118	25118	25118	25118	25118

6. In preparation for our next topic, re-arrange the Slice so that it shows the following:

Filter	Version: Actual
	Year: All
	Entity: All
	Department: All
Columns	Month: individual months (<i>Jan</i> to <i>Dec</i>)
Rows	Account:Version, Sales of Goods, Sales of Services, Revenue, Cost of Goods, Cost of Services, Cost of Sales, Gross Profit, Gross Profit %, Payroll and related expenses Distribution, Occupancy Expenses, Research and

Power**Excel**

- Place the Dimensions Version, Year, Entity and Department along the Filters section. Set display Members for all Dimensions along the Filter to ALL, except for the Version where Actual should be the display Member.
 (If you have been following the exercise, all the Dimensions indicated are already placed along the Filter pane except for the Year dimension. Simply drag and drop the Year dimension to the Filters section, right under the Version dimension.)
- Leave the Month dimension at the Columns section. Specify the display Members to be Jan to Dec. (If you have been following the exercise, this is the current setup)
- Leave the Account dimension at the Rows section. Presently, the desired Members are already displayed except for the *Version* member. Double-click on the Account dimension and in the Select Members dialog that appears, click on the Version member from the Members list on the left-hand pane, then drag and drop the Version member to the right-hand pane at the very top of the Display Members list.
- Still in the Select Members for Account dimension dialog, select the Version member then click on the insert empty row/column after selected member icon to insert a BLANK member between Version and Sales of Goods members. Click the green checkmark button.

Select Members for Account		- 0	×
Members Hierarchy Subsets Calculations		Q	8 🗸
I2 # Version Σ Revenue Σ Cost of Sales Σ Gross Profit # Payroll and related expenses # Director	Control Horizon Image: Blank Image: Blank Image: Blank Image: Blank		~

• Back in the PowerExcel Slice the PowerExcel sidebar appears as follows:

PowerExcel	▼ ×
Database	Cube
PandA_2022_Connect ~	Financial Data 🛛 🗸 🗸
T Filters	
12 Version: Actual	
12 Year: All	
🖾 Entity: All	
🖾 Department: All	
Columns L Month: Jan,Feb,Mar,Apr,M	ay, Jun, Jul, Aug, Sep, Oct, Nov, Dec
🚰 Rows	
4 Account: Version, Sales of C	Goods, Sales of Services,, Revenue,,
<	>

• Click the **Update** button.

Note: You can adjust the column width as desired so that you can better see the data. (As well, in the following images, highlighting has been removed.)

	A	в	С	D	Е	F	G	н	1	J	К	L	M
1	Database:	PandA_2022	2_Connec	st									
2	Cube:	Financial Dat	ta										
3	Dimensions:	Filter	Version	Members	Actual								
4		Filter	Year	Members	All								
5		Filter	Entity	Members	All								
6		Filter	Departm	Members	All								
7		Column	Month	Range	\$B\$11:\$P	/1\$11							
8		Row	Account	Range	\$A\$12:\$	A\$55							
9													
10	OLAPivotTable												
11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	Version	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
13													
14	Sales of Goods	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757
15	Sales of Services	41355.1	41355	41355	41355	41355	41355	41355	41355	41355	41355	41355	41355
16													
17	Revenue	193112.1	193112	193112	193112	193112	193112	193112	193112	193112	193112	193112	193112
18													
19	Cost of Goods	70713.5	70714	70714	70714	70714	70714	70714	70714	70714	70714	70714	70714
20	Cost of Services	18082.25	18082	18082	18082	18082	18082	18082	18082	18082	18082	18082	18082
21													
22	Cost of Sales	88795.75	88796	88796	88796	88796	88796	88796	88796	88796	88796	88796	88796
23													
24	Gross Profit	104316.35	104316	104316	104316	104316	104316	104316	104316	104316	104316	104316	104316
25	Gross Profit %	0.5401855	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402
26													
27	Payroll and related expen	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854
28	Distribution	4140	4140	4140	4140	4140	4140	4140	4140	4140	4140	4140	4140
29	Occupancy Expenses	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250
30	Research and Developme			2812.9	2812.9	2812.9	2812.9		2812.9			2812.9	2812.9
31	Sales and Marketing	4973.933	4973.9	4973.9	4973.9	4973.9	4973.9	4973.9	4973.9	4973.9	4973.9	4973.9	4973.9
32	Depreciation	3503.64	3503.6	3503.6	3503.6	3503.6	3503.6	3503.6	3503.6	3503.6	3503.6	3503.6	3503.6
33	Amortization	317.38	317.38	317.38	317.38	317.38	317.38	317.38	317.38	317.38	317.38	317.38	317.38
34	Administrative Expenses	1455.83	1455.8	1455.8	1455.8	1455.8	1455.8	1455.8	1455.8	1455.8	1455.8	1455.8	1455.8
35	Other operating Expense:	-105.36	-106.5	-106.5	-106.5	-106.5	-106.5	-106.5	-106.5	-106.5	-106.5	-106.5	-106.5
36													
37	Operating Expense	38202.273	38201	38201	38201		38201	38201	38201	38201	38201		38201
38	Operating Expense %	0.1978243	0.1978	0.1978	0.1978	0.1978	0.1978	0.1978	0.1978	0.1978	0.1978	0.1978	0.1978
39													
40	Operating Profit	66114.077	66115	66115	66115	66115	66115	66115	66115	66115	66115	66115	66115
41	Operating Profit %	0.3423611		0.3424			0.3424						
42	Interest Revenue	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22
43	Interest (Expense)	94,44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44
44													
45	EBIT	67890.027	67891	67891	67891	67891	67891	67891	67891	67891	67891	67891	67891
46													
47	Interest Revenue	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22
48	Interest (Expense)	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44
49	Interest	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66
50													
51	Profit Before Tax	68697.687	68699	68699	68699	68699	68699	68699	68699	68699	68699	68699	68699
52													
53	Income Tax Expense	-6786.614	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787
54													
55	Profit After Tax	61911.073	61912	61912	61912	61912	61912	61912	61912	61912	61912	61912	61912
56													

- 7. By now, you may have noticed that fact values appear a certain color. This is a result of the following:
 - Go to the **PowerExcel Tab** in the Excel ribbon and click the PowerExcel Slice **Options** button.



F	ile Home Inse	ert Page	e Layout	Formulas	Data	Revie	w Vi	ew H	Help	PowerE	xcel			[⊐ Con	nmen
	O 🗁 🖫 New Open Save	Show C) ptions	Find Refre	sh DRDC	t 🕂	Up	date	New	Insert	Delete	Show		O werExcel) lew
		Sidebar	·)	OLA Fx		Thro	ugh Cu	bes		Record	Record	Sidebar	Con	nection	<pre>c</pre>	ube
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1		PandA_2022							-		-			-		
2	Cube:	Financial Dat														
3	Dimensions:	Filter		Member: Actual												
4	Dimensions.	Filter	Year	Members All												
5		Filter	Entity	Member: All												
6		Filter		Members All												
7		Column		Range \$B\$11:\$	M\$11											
8		Bow		Range \$A\$12:\$												
9		1101	110000411	ridinge trittic.t	1100											
10	OLAPivotTable															
11		Jan	Feb	Slice Options										×		
12	Version	Actual	Actual	once options										\sim		
13		- Internation	1 Ionatal													
14	Sales of Goods	151757	151757	New Slice					Fo	rmatting –						
15	Sales of Services	41355.1		Create a	nou i Corke	naak			- X	- Format	Calla					
16					new workt	JOOK			Ľ		Cells					
17	Revenue	193112.1	193112	Create a	new Sheet	in currer	a Workh	ook			Formul					
18					new sheet	meaner	R WORD	DOK			Formu	as				
19	Cost of Goods	70713.5	70714	💿 Use curre	ent Sheet											
20	Cost of Services	18082.25									Aggreg	ates				
21				🗆 – Default Sele	ctions											
22	Cost of Sales	88795.75	88796								Detai	s				
23				📃 🗌 Constrain	Empty Ro	ws							-			
24	Gross Profit	104316.35	104316							E	Excel Fun	ctions				
25	Gross Profit %	0.5401855		📃 🗌 Delete Ri	emoved Ro	ows							_			
26				Dynamic	Dawl shal				-							
27	Payroll and related expen	14854	14854		HOW Label	IS			- Ut	otions						
28	Distribution	4140	4140							Autom	aticallu d	isplay side	har			
29	Occupancy Expenses	6250	6250							- Hakon	anouny a					
30	Research and Developme	2812.85	2812.9											_		
31	Sales and Marketing	4973.933	4973.9				Save			Cancel						
32	Depreciation	3503.64	3503.6				Save			cancer						
33	Amortization	317.38	317.38													
34	Administrative Expenses	1455.83		1455.8 1455.8	1455.8	1455.8	1455.8	1455.8	1455.8	3 1455.8	1455.8	1455.8				
35	Other operating Expense:	-105.36	-106.5	-106.5 -106.5	-106.5	-106.5	-106.5	-106.5	-106.5	5 -106.5	-106.5	-106.5				
36																

• In the Slice Options dialog that appears, note that the **Format Cells** checkbox is ticked.

- The Slice fact data/values are formatted such that:
 - Formulas appear as GREEN text
 - Aggregates appear as BLUE text
 - o Details appear as BLACK text
 - Excel Functions appear as RED text.

Formatting							
Formulas							
Aggregates							
Details							
Excel Functions							

• Click the **Save** button. The Slice appears as follows:

	A	в	С	D	Е	F	G	н	1	J	к	L	м
1	Database:	- PandA_202	_										
2	Cube:	Financial Da	_										
3	Dimensions:	Filter	Version	Members	Actual								
4		Filter	Year	Members									
5		Filter	Entity	Members									
6		Filter		Members									
7		Column	Month	Range	\$B\$11:\$P	/1::11							
8		Row	Account		\$A\$12:\$								
9		HOW	HCCOUNT	nange	Ψ ΠΨΙ ζ.ΨΙ	H¥33							
10	OLAPivotTable												
11	OLAFINO(Table	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	Version	Actual	Actual		Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
	version	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual
13	Colored Constants	454757	404707	404707	404707	404707	404707	404707	404707	404707	404707	404707	404707
14	Sales of Goods	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757		151757
15	Sales of Services	41355.1	41355	41355	41355	41355	41355	41355	41355	41355	41355	41355	41355
16	-	100110-1	100110	100110	100110	100110	100110	100110	100110	100110	100110	100110	1004/0
17	Revenue	193112.1	193112	193112	193112	193112	193112	193112	193112	193112	193112	193112	193112
18													
19	Cost of Goods	70713.5		70714	70714	70714	70714	70714	70714	70714	70714	70714	70714
20	Cost of Services	18082.25	18082	18082	18082	18082	18082	18082	18082	18082	18082	18082	18082
21													
22	Cost of Sales	88795.75	88796	88796	88796	88796	88796	88796	88796	88796	88796	88796	88796
23													
24	Gross Profit	104316.35	104316	104316	104316	104316	104316	104316	104316	104316	104316	104316	104316
25	Gross Profit %	0.5401855	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402	0.5402
26													
27	Payroll and related expen	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854
28	Distribution	4140	4140	4140	4140	4140	4140	4140	4140	4140	4140	4140	4140
29	Occupancy Expenses	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250	6250
30	Research and Developme	2812.85	2812.9	2812.9	2812.9	2812.9	2812.9	2812.9	2812.9	2812.9	2812.9	2812.9	2812.9
31	Sales and Marketing	4973.933		4973.9	4973.9	4973.9		4973.9	4973.9	4973.9	4973.9	4973.9	4973.9
32	Distribution	4140		4140	4140	4140	4140		4140	4140	4140		4140
33	Amortization	317.38		317.38	317.38	317.38	317.38		317.38	317.38			317.38
34	Administrative Expenses	1455.83		1455.8	1455.8	1455.8			1455.8	1455.8			1455.8
35	Other operating Expense:			-106.5	-106.5	-106.5	-106.5	-106.5	-106.5	-106.5			-106.5
36	e and opened ing enpended												
37	Operating Expense	38202.273	38201	38201	38201	38201	38201	38201	38201	38201	38201	38201	38201
38	Operating Expense %	0.1978243		0.1978	0.1978	0.1978			0.1978	0.1978			
39	Operating Expense 7.	0.1010240	0.1010	0.1010	0.1010	0.1010	0.1010	0.1010	0.1010	0.1010	0.1010	0.1010	0.1010
40	Operating Profit	66114.077	66115	66115	66115	66115	66115	66115	66115	66115	66115	66115	66115
41	Operating Profit %	0.3423611		0.3424		0.3424							0.3424
	Interest Revenue	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22
42													
43	Interest (Expense)	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44
44	FOIT		07004	07004	07004	07004	07004	07004	07004	07004	07004	07004	07004
45	EBIT	67890.027	67891	67891	67891	67891	67891	67891	67891	67891	67891	67891	67891
46													
47	Interest Revenue	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22	713.22		713.22
48	Interest (Expense)	94.44											
49	Interest	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66
50													
51	Profit Before Tax	68697.687	68699	68699	68699	68699	68699	68699	68699	68699	68699	68699	68699
52													
53	Income Tax Expense	-6786.614	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787	-6787
54													
55	Profit After Tax	61911.073	61912	61912	61912	61912	61912	61912	61912	61912	61912	61912	61912

We recommend at this point saving the Slice above by clicking on **Save As** and browsing to a preferred location, just as you save a normal spreadsheet.

Important: If you save a Slice, you can open it at any time and see the latest data from the Cloudbased model—simply hit F9 to re-establish the connection. The next section concerns **Saving a PowerExcel Slice to the Cloud** so that it can be viewed by other users who also have a PowerExcel connection to the same model.

2.4 Saving a PowerExcel Slice to the Cloud

As mentioned above, a PowerExcel Slice can be saved just as you would a normal Excel spreadsheet; and it will maintain its connection to an underlying data model—wherever that model is located (locally, on a network drive, in the Cloud, etc.) simply by pressing F9.

You can also save a PowerExcel Slice so that it become accessible to other users who connect to the a PowerExcel model in the Cloud.

To save the PowerExcel Slice in the Cloud:

- 1. Create or open a **PowerExcel Slice**, as in the example shown below.
- 2. Click on a cell containing a PowerExcel reference—e.g., in the example image below, the cell containing the OLAPivotTable PowerExcel reference, which is A10. Note: You may click on cells containing other PowerExcel references such as OLADatabase, OLACube, OLATableMember, OLATableRange, OLATableSubset, OLAPowerQuery, etc...
- 3. In the Excel ribbon, go to the **PowerExcel Tab** and click the **Save icon**. The Save (Slice) as dialog appears, as below.

O New	Open Sa	ve Show Sideba			efresh DRDC	Drill Through	Update Cubes		nsert Delet ecord Recor		Connection	s Options	Clear	New Lar Cube	nguage Ch	hang hang
	Pov	verExcel Slic	e		Power	Excel Data			SqI SS Live		PowerEx	cel Connecti	on	Cube		
A10	~ :	$\times \checkmark j$	fx =@0	LAPivotTak	ole(\$B\$1,\$B	\$2,\$B\$3:	\$E\$3,\$B\$4	\$E\$4,\$B\$	5:\$E\$5,\$B\$6	\$E\$6,\$B\$	7:\$E\$7,\$B\$8:	\$E\$8,\$B\$1:	2, FALSE, FA	ALSE, FALSE,	FALSE, TRU	UE)
	A	в	с	D	E	F	G	н	1.1	J	К	L	м	N	0	
Dim	ensions:	Filter	Version	Members	Actual											
L .		Filter	Year	Members	2021											
5		Filter	Entity	Members	Entity A											
5		Filter	Departme	Members	Sales											
7		Column	Month	Range	\$B\$11:\$E\$1	.1										
3		Row	Account	Range	\$A\$12:\$A\$	33										
9																
0 OLA	PivotTable															
1		Q1	Q2	Q3	Q4				Save				×			
2 Oth	er Income (E	255	255	255	255											
3 Oth	er Revenue	360	360	360	360				Save slice	as						
4 Oth	er (Expense)	-105	-105	-105	-105				Name	vnancac bras	akdown by Qtr					
5 Ope	rating Profit	17067.3	17067.3	17067.3	17067.3				realite.	Applitable biot	akdowi by dial					
6 Ope	rating Exper	9947.7	9947.7	9947.7	9947.7					Save	Can	cal				
7 Payr	oll and relat	3180	3180	3180	3180					34%6	Can	COL				
8 Dist	ribution	960	960	960	960											
9 Occi	upancy Expe	1800	1800	1800	1800											
0 Rese	earch and De	345	345	345	345											
1 Sale	s and Marke	1361.7	1361.7	1361.7	1361.7											
2 Dep	reciation	1950	1950	1950	1950											
3 Amo	ortization	186	186	186	186											
4 Adm	ninistrative E	357	357	357	357											
5 UTIL	ITIES	0	0	0	0											
6 Oth	er operating	-192	-192	-192	-192											
7 Gros	s Profit	27015	27015	27015	27015											
8 Rev	enue	45390	45390	45390	45390											
	s of Goods	42600	42600	42600	42600											
-	s of Services	2790	2790	2790	2790											
9 Sale	of Salar	18375	18375	18375	18375											
9 Sale O Sale	or sales	18150	18150	18150	18150											
9 Sale 0 Sale 1 Cost	of Goods	10130														
9 Sale 0 Sale 1 Cost 2 Cost		225	225	225	225											

Ready Calculate 📧 🎌 Accessibility: Good to go

- 4. Type the <name of the Slice>, e.g., Expenses breakdown by Qtr.
- 5. Click Save. You will see a prompt that says 'Slice saved successfully'.



6. Click **OK** to close the message prompt.

Next, another PowerExcel user—assuming he or she has a connection to the same PowerExcel model—can proceed as follows:

- 7. Launch Excel, create a new workbook.
- 8. From the **PowerExcel ribbon**, click on **Open**.
- 9. The Open Slice dialog appears, as below:

Open Slice			\times
Databases: PandA_2022_Connect ~ Cubes: Financial Data ~ Expenses breakdown by Otr	Step 1 - Location © Current Sheet: \$4\$1 O New Worksheet O New Workbook	Step 2 - Slice Type Perspective DB Functions Power Analyzer	
	Step 3 - Additional Options Hide Empty Rows Delete Removed Rows Dynamic Row Labels Insert	☐ Allow Excel Functions ☑ Format Cells by Type Cancel	

10. Once again: <u>assuming the next user has a connection to the database</u> (above, *PandA_2022_Connect* is also used as the Connection name, although using the same name is not required), the available Cubes will be shown (here, *Financial Data*). Directly below, the available Slices are listed: in the image, the Slice saved by the first user, *Expenses breakdown by Qtr* appears. By selecting this Slice, the user can create and insert it into a New Workbook, a New Worksheet or the Current Worksheet in the specified location (Step 1) with PowerExcel by using one of the Slice Types (Step 2: **Perspective, DB Functions**, and **Power Analyzer**). Other Slice options are also available (Step 3).

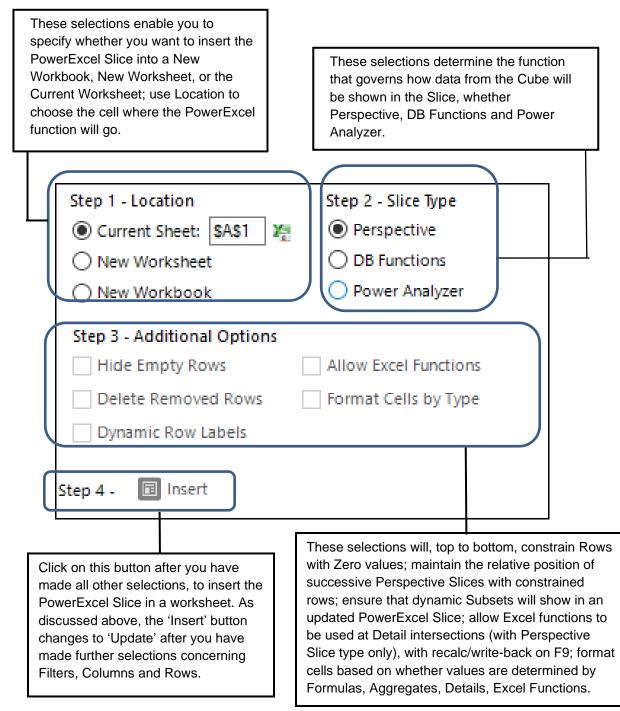
The new Slice will be the same as the one saved by the original/last user—e.g., as shown in the previous page. This next user can now save it locally or to another drive for continuous use; he or she may change a Filter or reorder Dimensions, etc.—and will then may want to rename if it is important to keep the "original" Slice as is.

In this manner, any person working on the collaborative model may see any Slice that has been saved and, therefore, be dynamically connected to the most updated data Furthermore—and this is a key point—the next (or any connected) user will also be able to contribute budget/forecast figures to a company-wide planning model, if that is the intended purpose for the Slice. (The ability to "write back" to a shared planning model is discussed in <u>Section 4, Entering Data in a PowerExcel Slice</u>.)

2.5 The PowerExcel Sidebar and Ribbon Commands

We are now in a position to explain some of the features that PowerExcel provides via the sidebar, which gives the user extensive capabilities in organizing data within the PowerExcel Slice (see next page); as well, we will explore the Commands on the PowerExcel Ribbon.

The selections at the bottom of the PowerExcel sidebar become visible at right when you click on the PowerExcel function.



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Note the selections at the top of the PowerExcel sidebar, which becomes visible when you click on a PowerExcel function.

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Database Cube PandA QS Connect Financial Data Filters L: Version: Actual L: Year: 2020 L: Entity: All	As shown previously: after creating a New Connection, this is where you will choose the PowerExcel database and the Cube in that database that you want to "Slice to Excel."
L: Department: All L: Columns L: Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec I: Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec I: Rows L: Account: Sales of Goods, Sales of Services, Revenue, Cost of C	These boxes enable you to (a) reorient the Dimensions you want to see as "Page", Columns and Rows Members, and (b) select the individual Dimension Members that you wish to see in the PowerExcel Slice.
<	

[see next page for PowerExcel Ribbon commands]

The following are the icons on the PowerExcel ribbon, with a brief description.

File	Home	Inser	t Pa	ge Layou	t Forr	nulas (Data	Review	View	Help	Powerl	Excel									₽ Co	omments	🖻 Share
0			>	٦.	\mathcal{Q}	ß	Ŧ	+		Ŧ		×	>	G	1	\times	<i>></i>	∐ ⊕	* -		1.0 →1.8	?	
New	Open		Show Sidebar	Options	Find OLA Fx	Refresh	DRDC	Drill Through	Update Cubes	New			Show Sidebar	Connection	5 Options	Clear Cache	New Cube				Software Updates I	About PowerExcel	
		PowerE	cel Slice				PowerE	xcel Data			SqL	SS Live		PowerEx	cel Connec	tion	Cube			Help			~

	PowerExcel Slice
New	Start here to create a Slice from a PowerExcel database (providing Connection exists).
Open	Opens a saved Slice, providing options about the Slice Type and where to insert the data
Save	Saves a PowerExcel Slice, which can be viewed by another user with a connection to the same model
Show Sidebar	Shows the PowerExcel Sidebar (pane) if you have unchecked the Option (see Option [PowerExcel Slice] below) to automatically display PowerExcel sidebar
Options	[PowerExcel Slice] Brings up a dialog concerning Workbooks (Create a new Workbook, Create a new Sheet in current Workbook) and to enable Defaults (Constrain Rows, Delete Removed Rows, Dynamic Row Labels). Also includes Formatting options and a checkbox to automatically Show/Hide PowerExcel sidebar
Find OLA Fx	Finds PowerExcel function in an open Slice governing the Slice [for current version: Perspective Slice]
	PowerExcel Data
Refresh	Refreshes Slice data after making Member selections
DRDC	[Licensed Feature] Saves a Slice as a View in a selected database (e.g., SQL Server) that is reachable by third-party products (Power BI, Tableau, Qlik, etc.)
Drill Through	[Licensed Feature] Access the multidimensional data or individual relational transactions that comprise a cell in a PowerExcel spreadsheet
Update Cubes	Allows an end-user with permissions to update Cube(s) in the relational source
	SQL SS Live
New	[Licensed Feature] Brings up a Forms pane on the right, for a user to access, update and delete data from the Fact table in SQL

Insert Record	[Licensed Feature] Enables user with access rights to add a new record to an underlying fact data table
Delete Record	[Licensed Feature] Enables user with access rights to delete a record to an underlying fact data table
Show Sidebar	Shows the PowerExcel Form Sidebar (pane)
	PowerExcel Connection
Connections	Create a New connection (or Delete an existing one), or select an existing connection to an underlying database, and shows Name, URL, Database
Options	Brings up a dialog concerning Caching Options, including Cache Expiration (Hours) and Disable All Caching
Clear Cache	Clears Cache in the open Slice
	Cube
New Cube	[Licensed Feature] Accesses the capability to create Cubes in Olation® from selected tabular data in an Excel spreadsheet
	Help
Language	While PowerExcel detects the operating system's default language, a user can make another available language selection
Change Password	Enables the user to change Password on the selected database
Change License	Brings up the Register PowerExcel window
Software Updates	Clicking on this will check for latest PowerExcel release (note that this is a licensed feature)
About PowerExcel	This shows information as to Version/build and License number of the PowerExcel User Client application
Updates ? About	licensed feature) This shows information as to Version/build and License number of the

There are additional features within PowerExcel to select Dimensions and Members you wish to display: Until now you changed Members in the Select Members dialog by deleting a Member on the right, and then moving a Member from the left to the right-hand pane to view it.

Notice at the top of the **Select Member** dialog that there are selections that can make what Member(s) appear easier.

Select Members for Version	_	X
Members Hierarchy Calculations ↓2 → ↓ ↓ ↓		Q 🛛 🗸
# Actual # Forecast # Budget		

Select Members dialog for Dimensions along the Filter section

Select Members for Account		-	
Members Hierarchy Subsets Calculations		Q	8 🗸
↓ <u>↓</u> 2	H Version		^
# Version ∑ Revenue ∑ Cost of Sales ∑ Gross Profit # Payroll and related expenses # Distribution # Occupancy Expenses	# Sales of Goods # Sales of Services Ξ BLANK ∑ Revenue Ξ BLANK # Cost of Goods		

Select Members dialog for Dimensions along the **Rows/Columns** section

Important: Notice that the Select Members dialog for Dimensions placed within the Columns/Rows has an additional Tab called **Subsets** along the left-hand side of the dialog.

Function	lcon	Description
	MEMBERS Tab (L	eft-hand pane)
Sort or Sort Members	Į [≜] -	Sort the Member list in Natural, Ascending Alphabetical, or Descending Alphabetical order.
Filter box		Type the filter parameter in the Filter box and click the Apply Filter button; Members that satisfy the filter parameter will appear.
Apply Filter	Y ≜	Click the Cancel Filter button to remove filter and see the full list of Members again.
Cancel Filter Search	Q	In the text box: type the starting string of letters for the Member you want to find; click the magnifying glass icon and the first Member with that string will appear. Click on the magnifying glass to see next Members.
	HIERARCHY Tab (Left-hand Pane)
Find Parent	t	Select-highlight a Member; clicking this will highlight its parent.
Search	Find:	In the Find text box: type the starting string of letters for the Member you want to find; click the magnifying glass icon and the first Member with that string will appear. Click on the magnifying glass to see next Members.
Expand (Hierarchy)	23	Expands the entire Dimension hierarchy.
Collapse (Hierarchy)	ж	Collapses the entire Dimension hierarchy.
This Tab is available	SUBSET Tab (Le conly for Dimensions along R	ft-hand Pane) ?ow/Column sections of the PowerExcel sidebar
Search	Find: Q	In the text box: type the starting string of letters for the Subset you want to find; click the magnifying glass icon and the first Subset with that string will appear. Click on the magnifying glass for next Members.
	CALCULATIONS Tab) (Left-hand Pane)
Search	Find:	In the text box: type the starting string of letters for the Calculation you want to find; click the magnifying glass icon and the first

		Calculation with that string will appear. Click on the magnifying glass for next Calculations.
POWI	EREXCEL SLICE CONTENT LIST	Toolbar icons (Right-hand Pane)
Copy Selected Members		Copies selected Member(s) on the left-hand pane to the PowerExcel Slice Content list at right.
Clear	0	Clears the Member(s) listed on the Slice Content list.
Clear and Copy Selected Members	D	Clears the Member(s) listed on the Slice Content list on the right and copies the selected Member(s) from the left-hand pane to the Slice Content list.
Expand all child members	љ	Expands the children of the currently selected Member.
Insert Empty Row/ Column after selected Member	3	Inserts an empty row after the currently selected Member in the resulting Slice.
Invert Selection	X	Select a Member(s) on the right side, click on the button; the "inverted Member(s)" will be selected. You can click on the Delete button to remove selected members. Clicking OK (green checkmark button) will show the remaining Members in the PowerExcel Slice.
Search	Q	In the text box: type the starting string of letters for the Member you want to find; click the magnifying glass icon and the first Member with that string will appear. Click on the magnifying glass to see next Members.
Exit	8	Click to close the Select Members dialog.
ОК	~	Click this to commit changes to the displayed Members and return to the PowerExcel Slice.

Finally, we can make note of one more important thing about PowerExcel—namely, the ability to continue to **improve a Slice by using standard Excel formatting**. In short, you can apply formatting (e.g., change the font, use highlighting, use conditional formatting etc.) to make a Slice like the one that follows—an Income Statement report that will be used in a demonstration later in this manual.

A	в	С	D	E	F	G	н	- I -	J	к	L	M	N	0	P
	PandA_2022_														
	Financial Data														
	Filter	Version	Members	Actual											
	Filter	Entity	Members	Entity A											
	Filter	Department	Members	Sales											
The Great Financials	Column1	Year	Range	\$B\$11:\$A											
Company	Column2	Month	Range	\$B\$12:\$A											
Where everyone gets to go home on time?	Row	Account	Subsets	Members											
OLAPIVO(Lable	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
	Method	Amount	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TotalYe
Version		1	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	
Sales of Goods			14,200	14,200	14,200	14,200	14,200	14,200	14,200	14,200	14,200	14,200	14,200	14,200	170,400
Sales of Services			930	930	930	930	930	930	930	930	930	930	930	930	11,16
Revenue			15,130	15,130	15,130	15,130	15,130	15,130	15,130	15,130	15,130	15,130	15,130	15,130	181,560
Cost of Goods			6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	6,050	72,60
Cost of Services			75	75	75	75	75	75	75	75	75	75	75	75	90
0			0.405	0.405	0.405	0.405	0.405	0.405	0.405	0.405	0.405	0.405	0.405	0.405	70 50
Cost of Sales			6,125	6,125	6,125	6,125	6,125	6,125	6,125	6,125	6,125	6,125	6,125	6,125	73,50
Gross Profit			9,005	9,005	9,005	9,005	9,005	9,005	9.005	9,005	9.005	9,005	9,005	9,005	108,06
Gross Profit %			58.5%	58.5%	58.5%	53.5%	58.5%	53.5%	53.5%	53.5%	58.5%	58.5%	53.5%	58.5%	585
ENCOS FILMINA			and and	energy and a second	2002005	access.	ent cos	ent cos	enteros.	enteros.	enters	ereccos.	ent cos	enteros	ent e
Payroll and related expenses			1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	12,72
Distribution			320	320	320	320	320	320	320	320	320	320	320	320	3.84
Occupancy Expenses			600	600	600	600	600	600	600	600	600	600	600	600	7,20
Research and Development			115	115	115	115	115	115	115	115	115	115	115	115	1,38
Sales and Marketing			454	454	454	454	454	454	454	454	454	454	454	454	5,44
Depreciation			650	650	650	650	650	650	650	650	650	650	650	650	7,80
Amortization			62	62	62	62	62	62	62	62	62	62	62	62	74
Administrative Expenses			119	119	119	119	119	119	119	119	119	119	119	119	1,42
UTILITIES						110		110		110	110				
Other operating Expenses (Incom			(64)	(64)	(64)	(64)	(64)	(64)	(64)	(64)	(64)	(64)	(64)	(64)	(76
Operating E s pense			3,316	3,316	3,316	3,316	3,316	3,316	3,316	3,316	3,316	3,316	3,316	3,316	39,79
Operating Expense %			21.8%	21.8%	21.8%	21.8%	21.9%	21.8%	21.8%	21.8%	21.8%	21.8%	21.8%	21.9%	213
Operating Profit			5,689	5,689	5,689	5,689	5,689	5,689	5,689	5,689	5,689	5,689	5,689	5,689	68,26
Operating Profit.%			37.6%	37.6%	37.6%	37.6%	37.6%	37.6%	37.6%	37.6%	37.6%	37.6%	37.6%	37.6%	37.6
Other Revenue			120	120	120	120	120	120	120	120	120	120	120	120	1,44
Other (Expense)			(35)		(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(35)	(42
Other Income (E x pense)			85	85	85	85	85	85	85	85	85	85	85	85	1,02
EBIT			5,774	5,774	5,774	5,774	5,774	5,774	5,774	5,774	5,774	5,774	5,774	5,774	69,28
labora at Davidance			26	26	26	26	26	26	26	26	26	26	26	26	3
Interest Revenue															
Interest (Expense) Interest			(16) 10	(16) 10	(16) 10	(16) 10	(16) 10	(19 12							
interest			10	10	10	10	10	10	10	10	10	10	10	10	12
Profit Before Taz			5,784	5,784	5,784	5,784	5,784	5,784	5,784	5,784	5,784	5,784	5,784	5,784	69,40
TOIL DEFUIE THE			0,104	0,104	0,104	0,104	0,104	0,104	0,104	0,104	0,104	0,104	0,104	0,104	03,40
Income Tax Expense			(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(1,480)	(17,75
and a superior			(1,00)	(1,100)	(1.00)	(1100)	(1,100)	(1100)	(1100)	(1,100)	(1,100)	(1,100)	(1100)	(1.00)	(0.05
			4,305	4,305	4,305		4,305		4,305			4,305			51,65

2.6 Working with a PowerExcel DB Functions Slice Type

PowerExcel's **DB Functions** Slice Type, when used as the means to bring data into a Slice, has the key advantage of returning business-model data (according to Dimensions selected and filtered) via <u>individual</u>, <u>discrete cell-by-cell functions</u>. In other words, each cell's value is governed by its own function (an OLAReadWrite function), rather than as part of a swath of cells, which is the case when the Perspective or the Power Analyzer Slice Types are used (the Power Analyzer method is discussed in the section following this one).

The following exercise demonstrates how to use PowerExcel DB Functions to create a Slice and the advantages of using it. Assuming that you already have a Connection to a PowerExcel database (in the example, PandA_2022_Connect), proceed as follows.

- 1. To create the example Slice for this exercise, go to the **PowerExcel Tab** and in the PowerExcel Slice control group, select the **New** icon
- In the PowerExcel sidebar that appears, click on the Database drop-down list and select the preferred PowerExcel Database connection (e.g., PandA_2022_Connect) and Cube (Financial Data).
- 3. Re-arrange the Dimensions by dragging and dropping them along the Filter, Rows and Column areas; and by specifying the indicated display Members, as below.

Filter	Version: Actual
	Year: 2021
	Entity: <i>Entity A</i>
	Department: Sales
Columns	Month: individual months <i>Jan</i> to <i>Mar</i> and aggregate month <i>Q1</i>
Rows	Account: Version, Sales of Goods, Sales of Services, Revenue, Cost of Goods, Cost of Services, Cost of Sales, Gross Profit, Gross Profit %, Payroll and related expenses, Distribution, Occupancy Expenses, Research and Development, Sales and Marketing, Depreciation, Amortization, Administrative Expenses, Other operating Expenses (Income), Operating Expense Operating Expense %, Operating Profit, Operating Profit %, Other Revenue, Other (Expense), Other Income (Expense), EBIT, Interest Revenue, Interest (Expense), Interest, Profit Before Tax, Income Tax Expense, Profit After Tax Note that there are no Blank Rows.

- 4. Click the green checkmark icon (OK button).
- Back in the PowerExcel sidebar, keep the defaults for Steps 1 and 3, but now in Step 2 select Slice Type DB Functions by clicking on the appropriate radio button option (circled in the following image). Note: Notice that in Step 4 that the checkbox options along the left become grayed out/disabled) Embed Excel Functions and Format Cells by Type are still available for selection.

Step 1 - Location	Step 2 - Slice Type
🖲 Current Sheet: 👫 🕅 🎽	O Perspective
🔿 New Worksheet	DB Functions
O New Workbook	O Power Analyzer
Step 3 - Additional Options	Allow Excel Functions
Step 4 - 📧 Insert	

6. At Step 4, click on Insert. The Slice will appear as follows (detail):

	A	В	C	D	E	F	G	Н	1	
1	Database:	PandA_	022_Conn	ect						
2	Cube:	Financi	l Data							
3	Dimensions:	Filter	Version	Members	Actual					
4		Filter	Year	Members	2021					
5		Filter	Entity	Members	Entity A					
6		Filter	Departm	Members	Sales					
7		Column	Month	Range	\$B\$11:\$E\$	\$11				
8		Row	Account	Range	\$A\$12:\$A\$	\$43				
9										
10										
11		Jan	Feb	Mar	01					
12	Version	Actual	Actual	Actual	0					
13	Sales of Goods	14200	14200	14200	42600					
14	Sales of Services	930	930	930	2790					
15	Revenue	15130	15130	15130	45390					
16	Cost of Goods	6050	6050	6050	18150					
17	Cost of Services	75	75	75	225					
18	Cost of Sales	6125	6125	6125	18375					
19	Gross Profit	9005	9005	9005	27015					
20	Gross Profit %	0.59518	0.59518	0.59518	0.59518					
21	Payroll and related expenses	1060	1060	1060	3180					
22	Distribution	320	320	320	960					
23	Occupancy Expenses	600	600	600	1800					
24	Research and Development	115	115	115	345					
25	Sales and Marketing	453.9	453.9	453.9	1361.7					
26	Depreciation	650	650	650	1950					
27	Amortization	62	62	62	186					
28	Administrative Expenses	119	119	119	357					
29	Other operating Expenses (Income	-64	-64	-64	-192					
30	Operating Expense	3315.9		3315.9	9947.7					
31	Operating Expense %	0.21916	0.21916	0.21916	0.21916					
32	Operating Profit	5689.1	5689.1	5689.1	17067.3					

Notice the function (circled in the above image, on the formula bar) that returns data to yellowhighlighted cell **B13**: it is the **OLAReadWrite** function mentioned at the start of this section: it is the operative means of returning data when the **DB Functions** Slice Type is selected in the sidebar. What is characteristic of this function?—in sum, that each cell has its own unique argument, i.e., the referenced cells in parenthesis following the function itself.

7. Having clicked in cell B13 (or any other), next click in the function itself, which appears in the formula bar (as shown below).

SUM	\checkmark : $\times \checkmark f_x$ =6	OLAReadWrite	\$ <mark>8\$1,\$8</mark> \$2	,\$E\$3, \$E\$ 4	, \$E\$5, <mark>\$E\$6, E</mark>	\$11,\$A1	.3)						
	А	В	с	D	E	F	G	н	1	J	К	L	м
1 Databa	se:	PandA_20	22_Conneo	:t									
2 Cube:		Financial I	bata										
B Dimens	sions:	Filter	Version	Members	Actual								
1		Filter	Year	Members	2021								
5		Filter	Entity	Members	Entity A								
5		Filter	Departme	Members	Sales								
7		Column	Month	Range	\$B\$11:\$E\$11	L							
3		Row	Account	Range	\$A\$12:\$A\$5	3							
)													
0													
1		Jan	Feb	Mar	Q1								
2 Versior	1	Actual	Actual	Actual	0								
3 Sales o	f Goods	\$A13)	14200	14200	42600								
4 Sales o	f Services	930	930	930	2790								
5 Revenu	le	15130	15130	15130	45390								
6 Cost of	Goods	6050	6050	6050	18150								
7 Cost of	Services	75	75	75	225								
8 Cost of	Sales	6125	6125	6125	18375								
9 Gross P	rofit	9005	9005	9005	27015								

The function in this cell (reproduced below) has unique cell references; if you click in any other cell that returns values, you will see that the cell references are indeed different.

=OLAReadWrite(\$B\$1,**\$B\$2**,\$E\$3,\$E\$4,**\$E\$5**,**\$E\$6**,**B\$11**,\$A13)

The OLAReadWrite function points to—and returns the value from—a precise multidimensional data point in the PowerExcel model: thus, the formula in Cell B13 is returning a value from the intersection of (in this example):

- \$B\$1 the Database where the model is located
- \$B\$2 the Cube in the Database
- \$E\$3 the Actual member in the Version dimension
- \$E\$4 the 2021 member in the Year dimension
- \$E\$5 the Entity A member in the Entity dimension
- \$E\$6 the Sales member in the Department dimension
- B\$12 Jan from the Month dimension [Column reference]
- \$A13 Sales of Goods from the Account dimension [Row reference]

The interesting—and very important—fact is that that these cells are themselves "selectable"—meaning that either by using the PowerExcel sidebar to the right or by doubleclicking on those governed by an {OLATableMember...} function (for Filters), you can select a different Member that will change all results in the field of data in Columns and Rows.

As an example, you can double-click in Cell \$E\$4, and make a selection of a different *Version*: if you do so and pick "Budget" (from the resulting PowerExcel *Select Member for Version* window, as shown in the next image), then results for all the Members, including those in Columns and Rows, will show results for *Budget* rather than *Actual*.

C	DLA_Vers \checkmark : $\times \checkmark f_x$ {=OLAT:	ableMemb	er(\$B\$1,\$B	\$2, "Filter"	,0,"∨ersio	n","Actua	I'')}				
	А	В	с	D	E	F	G	н	I.	J	K L
1	Database:	PandA_20)22_Conne	ct							
2	Cube:	Financial	Data								
3	Dimensions:	Filter	Version	Members	Actual						
4		Filter	Year	Members	2021	Select Mer					
5		Filter	Entity	Members	Entity A						
б		Filter	Departme	Members	Sales	Members	Hierarchy	Calculations			
7		Column	Month	Range	\$B\$11:\$E	Į₽-		- T	4	Q	# Actual
8		Row	Account	Range	\$A\$12:\$4	# Actual					i
9						# Foreca					
10						# Budge	t				
11		Jan	Feb	Mar	Q1						

For present, go back to (or keep the selection at) *Actual*. We will proceed what discovering this "cell-by-cell return of values" enables us to do in the following steps.

- 8. First delete Row 12, which shows data for the Version Account Member—this is a formatting step, to show our data results more cleverly.
- 9. After the Rows have shifted upward one Row, click in Cell C12—Feb, Sales of Goods.
- 10. Highlight all cells across and down to E14 (*Q1*, *Revenue*); "grab" those cells and drop them starting in Cell G12—the result will show as in the following image: the cells where you dropped the 'grabbed values' are highlighted in yellow in the next image.

1	A	В	С	D	E	F	G	Н	1	J
1	Database:	PandA_20	22_Conne	ct						
2	Cube:	Financial	Data							
3	Dimensions:	Filter	Version	Members	Actual					
4		Filter	Year	Members	2021					
5		Filter	Entity	Members	Entity A					
б		Filter	Departme	Members	Sales					
7		Column	Month	Range	\$B\$11:\$E\$1	1				
8		Row	Account	Range	\$A\$12:\$A\$5	53				
9										
10										
11		Jan	Feb	Mar	Q1					
12	Sales of Goods	14200					14200	14200	42600	
13	Sales of Services	930					930	930	2790	
14	Revenue	15130					15130	15130	45390	
15	Cost of Goods	6050	6050	6050	18150				Ī	
16	Cost of Services	75	75	75	225					
17	Cost of Sales	6125	6125	6125	18375					
18	Gross Profit	9005	9005	9005	27015					
19	Gross Profit %	0.595175	0.595175	0.595175	0.595175					
20	Payroll and related expenses	1060	1060	1060	3180					
21	Distribution	320	320	320	960					
22	Occupancy Expenses	600	600	600	1800					

11. If you now double-click on Cell E3 and select *Budget*, then hit F9 to update—note, those cells that you moved to the right refreshed to show Budget values (as in the next image)! That is because <u>Excel maintained the references to the cells, and the selected Member in them</u>, in their new position (G12 to I14—highlighted in yellow in the image below). In essence, you have proven that with PowerExcel, you can return values from a business model wherever you like, anywhere in a spreadsheet. This is enormously useful in creating precisely the report view you wish, from a multidimensional model of the sort PowerExcel features.

	А	В	С	D	E	F	G	н	1
1	Database:	PandA_20	22_Conne	ct					
2	Cube:	Financial I	Data						
3	Dimensions:	Filter	Version	Members	Budget				
4		Filter	Year	Members	2021				
5		Filter	Entity	Members	Entity A				
б		Filter	Departme	Members	Sales				
7		Column	Month	Range	\$B\$11:\$E\$:	11			
8		Row	Account	Range	\$A\$12:\$A\$	52			
9									
10									
11		Jan	Feb	Mar	Q1				
12	Sales of Goods	13200					13200	13200	39600
13	Sales of Services	4950					4950	4950	14850
14	Revenue	18150					18150	18150	54450
15	Cost of Goods	6600	6600	6600	19800				
16	Cost of Services	4400	4400	4400	13200				
17	Cost of Sales	11000	11000	11000	33000				
18	Gross Profit	7150	7150	7150	21450				
19	Gross Profit %	0.393939	0.393939	0.393939	0.393939				

12. For present purposes, revert back to the Actual member (double-click on Cell E3, then select Actual as the display Member).

Next, highlight Cells B12 to B14 (Jan, Sales of Goods to Jan, Revenue); click on the dot-Excel's "fill handle"-at the bottom right of Cell B14 and "drag" the highlight across to Column E.

13. When you hit F9 to update—you will see the that the data is the same as the data to the right, which you moved a few steps ago. Here Excel, as is its custom, ensured that what shows in Columns is in the correct sequence. (This is a fine example of Excel working the way a user expected!)

1	Database:	PandA_20	22_Conne	ct					
2	Cube:	Financial	Data						
3	Dimensions:	Filter	Version	Members	Actual				
4		Filter	Year	Members	2021				
5		Filter	Entity	Members	Entity A				
6		Filter	Departme	Members	Sales				
7		Column	Month	Range	\$B\$11:\$E\$	11			
8		Row	Account	Range	\$A\$12:\$A\$	52			
9									
10									
11		Jan	Feb	Mar	Q1				
12	Sales of Goods	14200	14200	14200	42600		14200	14200	42600
13	Sales of Services	930	930	930	2790		930	930	2790
14	Revenue	15130	15130	15130	45390		15130	15130	45390
15	Cost of Goods	6050	6050	6050	18150				
16	Cost of Services	75	75	75	225				
17	Cost of Sales	6125	6125	6125	18375				
18	Gross Profit	9005	9005	9005	27015				

14. This next step involves some housekeeping/formatting, which is always important in data presentation, and which here is necessary to arrive at our objective: to show Budget numbers to the right of the data showing Actuals:

Copy the cells C11 to E11 (Feb to Q1) and paste them into cell G11, and make those month headers **bold**.

Then, type the word **Budget** into Cell **G10**, making it **bold** as well.

15. Next, to change the reference for the right "block" of cells, so they show Budget figures: Click in Cell G12, then click within the function in the formula bar. Change the reference to Actual (\$E\$3) to Budget by highlighting it and pointing to Cell G10 (you can do this by pulling the rectangle surrounding E3 down to G10). Before you press F9 to recalculate, your spreadsheet will look as follows (note the arrow

now referencing cell G10):

Ľ	$\bigcup \qquad \bigvee \qquad \bigvee \qquad \bigvee \qquad f_x = OLA$	Readwrite	(\$8\$1,\$8\$2	,\$G\$10,\$E\$	\$4, \$E\$5, \$E\$ (6,C\$11,\$A	(12)			
	А	В	с		E	F	G	н	I	J
1	Database:	PandA_20	22_Conne	ct						
2	Cube:	Financial	Data	-						
3	Dimensions:	Filter	Version	Members	Actual					
4		Filter	Year	Members	2021					
5		Filter	Entity	Members	Entity A					
б		Filter	Departme	Members	Sales					
7		Column	Month	Range	\$B\$11:\$E\$1	.1				
8		Row	Account	Range	\$A\$12:\$A\$	52				
9										
10							Budget			
11		Jan	Feb	Mar	Q1		Feb	Mar	Q1	
12	Sales of Goods	14200	14200	14200	42600		\$G\$10,	14200	42600	
13	Sales of Services	930	930	930	2790		930	930	2790	
14	Revenue	15130	15130	15130	45390		15130	15130	45390	
15	Cost of Goods	6050	6050	6050	18150					
16	Cost of Services	75	75	75	225					
17	Cost of Sales	6125	6125	6125	18375					

16. Hit the Enter key and then press F9—note that the value changes to show Budget data (as per the arrow in the following image)! As we saw earlier, there is indeed a Budget value of 13200 for Budget, Sales of Goods for Feb (for 2021, Entity A, Sales—i.e., the other referenced cells.)

9								
10						Budget		
11		Jan	Feb	Mar	Q1	Feb	Маг	Q1
12	Sales of Goods	14200	14200	14200	42600	13200	14200	42600
13	Sales of Services	930	930	930	2790	930	930	2790
14	Revenue	15130	15130	15130	45390	15130	15130	45390
15	Cost of Goods	6050	6050	6050	18150			

17. Once again put your cursor in Cell **G12**; use the fill handle at the bottom right and pull down to include G13 and G14; hit Enter and then F9 to update. Again, these cells update to show Budget values. Lastly, highlight G12 through G14 and, as above, use the fill handle to pull the highlighted area across, covering all of the data set through to Column I. Hit Enter and F9. The result set will show as in the following image.

	А	В	с	D	E	F	G	н	I I
1	Database:	PandA_20	22_Conne	ct					
2	Cube:	Financial	Data						
3	Dimensions:	Filter	Version	Members	Actual				
4		Filter	Year	Members	2021				
5		Filter	Entity	Members	Entity A				
6		Filter	Departme	Members	Sales				
7		Column	Month	Range	\$B\$11:\$E\$	11			
8		Row	Account	Range	\$A\$12;\$A\$	52			
9									
10							Budget		
11		Jan	Feb	Mar	Q1		Feb	Mar	Q1
12	Sales of Goods	14200	14200	14200	42600		13200	13200	39600
13	Sales of Services	930	930	930	2790		4950	Calculatin	14850
14	Revenue	15130	15130	15130	45390		18150	18150	54450
15	Cost of Goods	6050	6050	6050	18150				
16	Cost of Services	75	75	75	225				
17	Cost of Sales	6125	6125	6125	18375				

As a final part of this exercise, we will do something that is covered more in depth in a later section: entering data into a PowerExcel model—here will type a couple of numbers into this spreadsheet, which will further demonstrate (and validate) the use of creating data sets in a spreadsheet by using the DB functions Slice Type (i.e., the OLAReadWrite function).

18. Type example numbers—e.g., go to cell G12 and type 9999 as the Sales of Goods. In this way we might be entering future budget numbers (in actuality, the entry template would be for a "plan" period, not the current months), with full, and nearby, knowledge of ongoing Actuals. (The Actual figures appear in Cells C12—highlighted in yellow to the left in the next image.) Hit Enter and F9.

	А	В	с	D	E	F	G	н	1	J
1	Database:	PandA_2022_C	Connect							
2	Cube:	Financial Data								
3	Dimensions:	Filter	Version	Members	Actual					
4		Filter	Year	Members	2021					
5		Filter	Entity	Members	Entity A					
б		Filter	Department	Members	Sales					
7		Column	Month	Range	\$B\$11:\$E\$11					
8		Row	Account	Range	\$A\$12:\$A\$42					
9										
10							Budget			
11		Jan	Feb	Mar	Q1		Feb	Mar	Q1	
12	Sales of Goods	14200	14200	14200	42600		9999	13200	36399	
13	Sales of Services	930	930	930	2790		4950	4950	14850	
14	Revenue	15130	15130	15130	45390		14949	18150	51249	
15	Cost of Goods	6050	6050	6050	18150					
16	Cost of Services	75	75	75	225					
17	Cost of Sales	6125	6125	6125	18375					

As shown above on the right, the *Budget* numbers appear and even calculate automatically (highlighted in pink), delivering the updated *Revenue* number for *Feb.* Additionally, the Q1 value also updates to reflect the changes (aggregate values). This calculation, defined once in the PowerExcel model—rather than in numerous cells individually, in numerous spreadsheets—demonstrates another advantage of using PowerExcel for business modeling.

2.7 Working with the PowerExcel Power Analyzer Slice Type

The PowerExcel Power Analyzer Slice Type dynamically creates a Slice in Excel in a powerful format that leverages Excel's own Power Query capabilities. In sum, it gives the user the ability to apply any queries to the table, apply numerous filters, easily reorder the table, and record/automate/undo changes, among other capabilities.

IMPORTANT: The important thing to take note of when using the PowerExcel Power Analyzer Slice Type (which uses the OLAPowerQuery function) is that **it is updated using the Refresh button found in the PowerExcel Tab** of the Excel ribbon. The F9 key WILL NOT refresh a PowerExcel Slice that has utilized the Power Analyzer as the Slice type.

The following exercise demonstrates the use of **PowerExcel's Power Analyzer** to create a Slice. Assuming that you already have a Connection to a PowerExcel database (in the example, **PandA_2022_Connect**), proceed as follows:

- 1. Open a new Excel workbook. Go to the **PowerExcel Tab** and in the PowerExcel Slice control group, select the **New** icon.
- 2. In the PowerExcel sidebar that appears, click on the **Database** drop-down list and select the preferred PowerExcel Database connection (e.g., **PandA_2022_Connect**) and Cube (i.e., **Financial Data**).
- 3. In the PowerExcel sidebar, make the following selections for Dimensions (in Filter, Rows and Columns) like so:

Filter	Version: Actual
	Year: All
	Entity: All
	Department: All
Columns	Month: individual months (<i>Jan</i> to <i>Dec</i>) and aggregate month <i>Total Year</i>
Rows	Account: Version, BLANK, Sales of Goods, Sales of Services, BLANK, Revenue, BLANK, Cost of Goods, Cost of Services, Cost of Sales, BLANK, Gross Profit, Gross Profit %, BLANK, Payroll and related expenses, Distribution, Occupancy Expenses, Research and Development, Sales and Marketing, Depreciation, Amortization, Administrative Expenses, Other operating Expenses (Income), BLANK, Operating Expense Operating Expense %, BLANK, Operating Profit, Operating Profit %, BLANK, Other Revenue, Other (Expense), Other Income (Expense), BLANK, EBIT, BLANK, Interest Revenue, Interest (Expense), Interest, BLANK, Profit Before Tax, BLANK, Income Tax Expense, BLANK, Profit After Tax

4. Once you have configured the PowerExcel Slice: back in the PowerExcel sidebar, select a Slice Type (Step 2): use **PowerExcel Power Analyzer** by clicking on the appropriate radio button option (circled in the following image).

Note that all the checkbox options are grayed out except for **Hide Empty Rows** and **Delete Removed Rows**. The grayed-out options are not available in a Power Analyzer Slice Type.

Step 1 - Location Current Sheet: \$A\$1 New Worksheet New Workbook	Step 2 - Slice Type O Perspective DB Functions O Power Analyzer
Step 3 - Additional Options Hide Empty Rows Delete Removed Rows Dynamic Row Labels	Allow Excel Functions Format Cells by Type
Step 4 - 🛅 Insert	

5. Click the **Insert** button located at the bottom of the PowerExcel sidebar. Note the OLAPowerQuery function (see the next image, where arrow points, cell A10)—this is the PowerExcel function that governs how data appears in the spreadsheet. The function arguments appear in the formula bar, above, which is circled.

S Subset 41355.1 41355	A A	в	с	D	Е	F	G	н	1.1	J	к	L	м	N
Brendion: Filter Varian Actual Iffermation Filter Freiby All Iffermation Iffermation Filter Entity All Iffermation Iffermation Filter Entity All Iffermation Iffermation Column Month Member/Hild Iffermation Accual	Database:	PandA_202	2_Connect											
File Year All If demonston (Inference) File Department All (Inference) Inference) Aun Aun Aun Aun Inference) CultPoundCarey Accual Accual </td <td>Cube:</td> <td></td>	Cube:													
File Year All If demonston (Inference) File Department All (Inference) Inference) Aun Aun Aun Aun Inference) CultPoundCarey Accual Accual </td <td>Dimensions:</td> <td>Filter</td> <td>Version</td> <td>Actual</td> <td>R[®]dimension</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Dimensions:	Filter	Version	Actual	R [®] dimension									
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File Department: All If demonston CLAPOureQuery Accual Accual <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>														
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Account Prob. <		Row	Account	Memberstve	{{`dimension									
Account Date Feb Play Actual														
Version Actual														
BLANK S1757 151757 <td></td>														
Sales of Goods 151757 <th< td=""><td>Version</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>Actual</td><td>0</td></th<>	Version	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	0
Bales of Services 41355.1	BLANK													
BLANK Pervenue 193112.1 <t< td=""><td>Sales of Goods</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>151757</td><td>1821084</td></t<>	Sales of Goods	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	1821084
BLANK Pervenue 193112.1 <t< td=""><td>Sales of Services</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>41355.1</td><td>496261.2</td></t<>	Sales of Services	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	496261.2
Persenue 193112.1														
ELAMK Cost of Goods 70713.5		193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	2317345.2
Cost of Goods 70713 5		100112.1	155112.1	100112.1	100112.1	100112.1	100112.1	100112.1	155112.1	100112.1	133112.1	100 112.1	100112.1	2011040.2
D Cord Services 10082.25 100316.35 1043		70712.5	70712.5	70712.5	70712 5	70712.5	70712.5	70712.5	70712 5	70712.5	70712.5	70710 5	70712.5	040500
Cort of Sules 88795.75														
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2 Conce Prolit 104316.35 104		88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	1065549
Gross Profit X: 0.5401855														
ELANK Halbs 14854 <th< td=""><td>Gross Profit</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>104316.35</td><td>1251796.2</td></th<>	Gross Profit	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	1251796.2
Psycoland-related expenses 14654	Gross Profit %	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855	0.5401855
Paynoll and related expenses 14854 <t< td=""><td>BLANK</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	BLANK													
Discription 4140		14854	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854	14854	178248
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Dperating Expense 38201 F33														
Operating Expense % 0.1978243 0.1978185 0.3423669 0.3423669 0.3423669 0.3423669 0.3423669		38202 273	38201 153	38201 153	38201 153	38201 153	38201 153	38201 153	38201 153	38201 153	38201 153	38201 153	38201 153	458414.96
Bi LANK Si Bi ANK Setting Profit 66115.197 5123.45 -233.45 -233.45 -														
Dperating Profit 66115.197		0.1310243	0.1310103	0.1310103	0.1310103	0.1310103	0.1310103	0.1310103	0.1310103	0.1310103	0.1310103	0.1310103	0.1310103	0.131013
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Dicker Revenue 2009.4 200.4 200.4 200.4 20		0.3423611	0.3423669	0.3423669	0.3423669	0.3423669	0.3423669	0.3423669	0.3423669	0.3423669	0.3423669	0.3423669	0.3423669	0.3423664
Other (Expense) -233.45														
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EBIT 67890.027 67891.147 678	Other Income (Expense)	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	21311.4
EBIT 67890.027 67891.147 678	BLANK													
BLANK 713.22 </td <td></td> <td>67890.027</td> <td>67891.147</td> <td>67891.147</td> <td>67891.147</td> <td>67891 147</td> <td>67891.147</td> <td>67891.147</td> <td>67891.147</td> <td>67891.147</td> <td>67891.147</td> <td>67891.147</td> <td>67891 147</td> <td>814692.64</td>		67890.027	67891.147	67891.147	67891.147	67891 147	67891.147	67891.147	67891.147	67891.147	67891.147	67891.147	67891 147	814692.64
Interest Revenue 713.22 <		27000.021	21001.141	51001.001	21001.111	51001.141	51001.001	51001.741	21001.111	21001.141	51001.001	21001.141	51001.141	211002.04
Interest (Expense) 34.44 <td></td> <td>712.22</td> <td>712.22</td> <td>712.22</td> <td>712.22</td> <td>712.22</td> <td>712.22</td> <td>712 22</td> <td>712.22</td> <td>712.22</td> <td>712.22</td> <td>712.22</td> <td>712.22</td> <td>8558.64</td>		712.22	712.22	712.22	712.22	712.22	712.22	712 22	712.22	712.22	712.22	712.22	712.22	8558.64
Interest 807.66 807.67 80														
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Income Tax Expense -6786.614 -6786.726 -		68697.687	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	824384.56
Income Tax Expense -6786.614 -6786.726 -6786.726 -6786.726 -6786.726 -6786.726 -6786.726 -6786.726 -6786.726 -6786.726 -6786.726 -6786.726 -81440	BLANK													
BLANK		-6786.614	-6786.726	-6786.726	-6786.726	-6786,726	-6786,726	-6786.726	-6786,726	-6786.726	-6786,726	-6786.726	-6786,726	-81440.59
	BLANK													

Important: Most of the manipulations you made using Perspective and DB Functions Slice Types to arrange Columns and Rows, and to select Members to filter, are available in the Power Analyzer Slice. You can try these on your own, arranging a Slice according to your preferences, as explained below.

The great benefit of using PowerExcel's Power Analyzer capability is that—following the creation of a Slice—you can leverage all of Excel's own **Power Query** options. To show some examples of what can be done, proceed as follows:

6. With your cursor in the PowerExcel Slice, go to the **Data Tab of the Excel** ribbon, and select the **Queries & Connections** command icon.

The Queries and Connections sidebar appears to the right of the PowerExcel Slice.

File Home Insert	Page Layo	ut Form	nulas Da	ata Revie	w View	Help	PowerExc	el								Comments	ि sl	hare
Get From Text/CSV Get From Web Data ~ I From Table/Rang	Exis	ent Sources ting Conne	ctions F	Refresh	Queries & Properties Edit Linis	Connection		tocks	Geography	^ Z ▼ Z		ل ر Filter	Clear Reapply	Text to Columns ≅ ∽ 1000	What-If Analysis ~ Sheet	편팀 Group 👻 현립 Ungroup 👻 특丽 Subtotal	+3	
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14 Sales of Goods	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	1821084	48 rows loaded				
15 Sales of Services	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1		40 TOWS TO due o				
6 BLANK																		
7 Revenue	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	2317345.2					
8 BLANK																		
19 Cost of Goods	70713.5		70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5						
20 Cost of Services	18082.25		18082.25		18082.25	18082.25	18082.25	18082.25	18082.25	18082.25	18082.25	18082.25	216987					
21 Cost of Sales 22 BLANK	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	1065549					
22 BLANK 23 Gross Profit	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	1251796.2	-				
23 Gross Profit		104310.35	104310.35	104310.35	104310.35	104310.35	104316.35	104310.35	104310.35	104310.35	104310.35	104310.35						
< → Sheet1	(+)							4					•					

7. When you select a query and double-click on it (see where arrow points), the **Olation – Power Query Editor** appears. (This is shown in the next image.)

Within the Query Editor, you can make all kinds of changes to the orientation of the data; as well, you can edit the query to show data as you like—there are truly limitless possibilities.

These allow you to perform actions such as (but not limited to):

- Re-order the Columns and Rows
- Record and Delete some steps or actions performed
- Remove, Add or Duplicate Columns
- Unpivot Columns
- Filter Data that appears in Columns

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											^
d∓ P se	Refresh Preview + Manage + Query	Choose Remove Columns - Columns -	Keep Remov Rows • Rows Reduce Rows	Z VE	Split Group	Data Type: Any • Use First Row as Headers • Jack 2 Replace Values Transform	Merge Queries • Append Queries • Combine Files Combine	Manage Parameter: Parameter	; ▼ settings	📰 Enter Data	
							•				
	< fx = Table.Exp	andRecordColumn(01	ationTable,	Table.Co	lumnNames(Olati	onTable){0}, Record.Field	Names(Source{0}))	~	Query S	ettings	\times
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3	Sales of Goods		151757		151757	151757	151	757			
4	Sales of Services		41355.1		41355.1	41355.1	413	55.1	All Properti	es	
5	BLANK		null		null	null		null	▲ APPLIED S	TEPS	
6	Revenue		193112.1		193112.1	193112.1	1931	12.1	json		
7	BLANK		null		nuli	null		null	Source		*
8	Cost of Goods		70713.5		70713.5	70713.5	707	13.5	Olation	Table	-8-
9	Cost of Services		18082.25		18082.25	18082.25	1808	2.25	× Expand		
10	Cost of Sales		88795.75		88795.75	88795.75	8879	5.75			
11	BLANK		null		nuli	null		null			
12	Gross Profit		104316.35		104316.35	104316.35	10431	6.35			
	Gross Profit %		0.540185467		0.540185467	0.540185467	0.540185	467			
			null		nuli			null			
			14854		14854			854			
16			4140		4140			140			
17			6250		6250			5250			
18	-		2812.85		2812.85		281	~			
19			4973.933		4973.933	4973.933	4973	933			

8. First, let us filter the Accounts to remove all sub accounts of *Operating Expense* from the Slice display.

10	OLAPowerQuery			
11	Account 💌	Jan 💌	Feb 💌	Mar 💌
12	Version	Actual	Actual	Actual
13	BLANK			
14	Sales of Goods	151757	151757	151757
15	Sales of Services	41355.1	41355.1	41355.1
16	BLANK			
17	Revenue	193112.1	193112.1	193112.1
18	BLANK			
19	Cost of Goods	70713.5	70713.5	70713.5
20	Cost of Services	18082.25	18082.25	18082.25
21	Cost of Sales	88795.75	88795.75	88795.75
22	BLANK			
23	Gross Profit	104316.35	104316.35	104316.3
24	Gross Profit %	0.540185467	0.540185467	0.54018546
25	BLANK			
26	Payroll and related expenses	14854	14854	1485
27	Distribution	4140	4140	414
28	Occupancy Expenses	6250	6250	6250
29	Research and Development	2812.85	2812.85	2812.8
30	Sales and Marketing	4973.933	4973.933	4973.933
31	Depreciation	3503.64	3503.64	
32	Amortization	317.38	317.38	317.30
- 33	Administrative Expenses	1455.83	1455.83	1455.83
- 34	Other operating Expenses (Income)	-105.36	-106.48	-106.48
35	BLANK			
36	Operating Expense	38202.273	38201.153	
37	Operating Expense %	0.197824336	0.197818536	0.197818536

To do this:

- In the Olation Power Query Editor, click on the Account drop-down (see where arrow points in the image below).
- Uncheck all sub-accounts of OPERATING EXPENSE: Payroll and related expenses, Distribution, Occupancy Expenses, Research and Development, Sales and Marketing, Depreciation, Amortization, Administrative Expenses, Other operating Expenses (Income)—some of these are shown, unchecked and shaded in yellow, in the next image below.

1 🥲	9 Olation Sheet1 - Power C	uery Editor										- 0	×
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> [$\times \sqrt{f_x}$ =	andReco	ordColumn(0	lationTable, Ta	able.Co	lumnNames	(Olatio	nTable){0}, Record.FieldM	lames(Source{0}))	~	Query Se	ttinas	×
<u>د</u> ا	123 Account	- 48	Ian	AB	C Eah		Ţ	S Mar	ABC Apr	ABC 123 Ⅳ	. ,	5	
	1 Version	£↓	Sort Ascendi	ng					Actual	Ac	PROPERTIES	1	
	2 BLANK	₹↓	Sort Descend	ding				null		null	Name		
	3 Sales of Goods		Clear Sort					151757	15	1757	Olation Shee	et1	
	4 Sales of Services	T	Clear Filter					41355.1	413	55.1	All Properties	;	
	5 BLANK		Remove Emp					null		null	▲ APPLIED ST	EPC .	
	6 Revenue			, ty				193112.1	1931	12.1			
	7 BLANK		Text Filters				*	null		null	json Source		-8-
	8 Cost of Goods		Search					70713.5	707	13.5	OlationTa	able	÷
	9 Cost of Services		(Select	AID				18082.25	1808	2.25	× Expanded		
	10 Cost of Sales			strative Expenses			^	88795.75	8879	95.75			
	11 BLANK		Amorti					null		null			
	12 Gross Profit		✓ BLANK					104316.35	10431	6.35			
	13 Gross Profit %		✓ Cost of	Goods				0.540185467	0.54018				
	14 BLANK		✓ Cost of	Sales				null		null			
	15 Payroll and related expenses		Cost of					14854		4854			
	16 Distribution		Deprec					4140		4140			
	17 Occupancy Expenses		Distribu	ution			<u> </u>	6250		6250			
	18 Research and Development		EBIT					2812.85		2.85			
	19 Sales and Marketing				Ok	Car	cel	4973.933	4973	>	L		
	MNS, 45 ROWS Column profiling to	base			0	Cal	Para la			-	DDEV	IEW DOWNLOADED ON	MON

• Click **OK** to apply changes and exit the Filter box. Back in the Olation – Power Query Editor, notice that the table is updated.

Note: You will see in the Olation – Power Query Editor a list of actions performed. Look at the applied steps section: notice the action we just performed, i.e., **Filtered Rows** (see where arrow points in the image below).

Note: You can also rename the actions or steps.

To do this: right-click on the step/action \rightarrow select **Rename** option \rightarrow type the **<new name>**.

le	ŀ	Home Transform Add	Column	View									~
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	×	$\checkmark f_X$ = Table.Se	lectRo	ws(Expanded0	lation, each	([Accour	nt] <> "Administ	rative Expenses" and [Acc	ount] <> "Amortizatio	on" 🗸	Query Set	tinas	×
		ABC 123 Account	Ţ	ABC 123 Jan		ABC 123 Feb		ABC 123 Mar	ABC Apr	▲BC 123 N			
		Version		Actual		Actual			Actual	Ac	▲ PROPERTIES		
		BLANK		Actual	null	Actual	null	null		null	Name		
		Sales of Goods			151757		151757	151757		757	Olation Sheet	1	
		Sales of Services			41355.1		41355.1	41355.1	413		All Properties		
		BLANK			null		null	null		null		DC.	
	6	Revenue			193112.1		193112.1	193112.1	1931	12.1	▲ APPLIED STE	rs	
	7	BLANK			null		null	null		null	json		
	8	Cost of Goods			70713.5		70713.5	70713.5	707	13.5	Source		*
	9	Cost of Services			18082.25		18082.25	18082.25	1808	2.25	OlationTa Expanded		4
	10	Cost of Sales			88795.75		88795.75	88795.75	8879	5.75	× Filtered R	4	÷
	11	BLANK			null		null	null		null	P C Filtered II		~
	12	Gross Profit			104316.35		104316.35	104316.35	10431	6.35			
	13	Gross Profit %			0.540185467		0.540185467	0.540185467	0.540185	5467			
	14	BLANK			null		null	null		null			
	15	BLANK			null		null	null		null			
	16	Operating Expense			38202.273		38201.153	38201.153	38201	153			
	17	Operating Expense %			0.197824336		0.197818536	0.197818536	0.197818	8536			
	18	BLANK			null		null	null		null 🗸 🗸			
	19	Operating Profit			66114.077		66115.197	66115.197	66115	.197			

Once you click on the Close & Load command icon, you will see that the changes have taken effect in the PowerExcel Slice (as shown below).
 Notice that the detail *Operating Expense accounts* (formerly in rows 26 to 34) no longer appear in the PowerExcel Slice.

e Home Insert P	Page Layout F	Formulas Da	ta Review	View Help	PowerExcel								Comments
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А	В	С	D	E	F	G	н	1	J	к	L	м	N
Database:	PandA 2022 C	Connect											
Cube:	Financial Data												
Dimensions:	Filter	Version	Actual	[{"dimensionr									
	Filter	Year	All	[{"dimensionr									
	Filter	Entity	All	[{"dimensionr									
	Filter	Department	All	[{"dimensionr									
		Month	Members(Jan;										
		Account	Members(Ver										
OLAPowerQuery													
													TotalYear 💌
Version	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	Actual	0
BLANK													
Sales of Goods	210687	210687	210687	210687	210687	210687	210687	210687	210687	210687	210687	210687	2528244
Sales of Services	45233.2	45233.2	45233.2	45233.2	45233.2	45233.2	45233.2	45233.2	45233.2	45233.2	45233.2	45233.2	542798.4
BLANK													
Revenue	255920.2	255920.2	255920.2	255920.2	255920.2	255920.2	255920.2	255920.2	255920.2	255920.2	255920.2	255920.2	3071042.4
BLANK													
Cost of Goods	96002.5	96002.5	96002.5	96002.5	96002.5	96002.5	96002.5	96002.5	96002.5	96002.5	96002.5	96002.5	1152030
Cost of Services	18397.25	18397.25	18397.25	18397.25	18397.25	18397.25	18397.25	18397.25	18397.25	18397.25	18397.25	18397.25	220767
BLANK													
Cost of Sales	114399.75	114399.75	114399.75	114399.75	114399.75	114399.75	114399.75	114399.75	114399.75	114399.75	114399.75	114399.75	1372797
BLANK													
Gross Profit	141520.45	141520.45	141520.45	141520.45	141520.45	141520.45	141520.45	141520.45	141520.45	141520.45	141520.45	141520.45	1698245.4
Gross Profit %	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634	0.552986634
BLANK													
BLANK													
Operating Expense	49552.1721	49551.0521	49551.0521	49551.0521	49551.0521	49551.0521	49551.0521	49551.0521	49551.0521	49551.0521	49551.0521	49551.0521	594613.7452
Operating Expense %	0.193623528			0.193619152		0.193619152	0.193619152		0.193619152	0.193619152	0.193619152		0.193619517
BLANK													
Operating Profit	91968.2779	91969.3979	91969.3979	91969.3979	91969.3979	91969.3979	91969.3979	91969.3979	91969.3979	91969.3979	91969.3979	91969.3979	1103631.655
Operating Profit %	0.359363106				0.359367482	0.359367482		0.359367482	0.359367482		0.359367482		0.359367117
BLANK				102	102	102	102	101	102	401			
Other Revenue	2541	2541	2541	2541	2541	2541	2541	2541	2541	2541	2541	2541	30492
Other (Expense)	-413	-413		-413	-413	-413	-413	-413	-413	-413	-413	-413	
Other Income (Expense)	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	2128	
BLANK	2120	2120	2120	2120	2120	2120	2120	2120	2120	2120	2120	2120	20000
EBIT	94096.2779	94097.3979	94097.3979	94097.3979	94097.3979	94097.3979	94097.3979	94097.3979	94097.3979	94097.3979	94097.3979	9/097 2979	1129167.655
BLANK	54656.2115	54651.3513	54051.3513	54657.3573	54651.3513	54657.3575	54651.3513	54651.3515	54651.3513	54657.3575	54651.3513	54657.3573	1120107.033
Interest Revenue	821.12	821.12	821.12	821.12	821.12	821.12	821.12	821.12	821.12	821.12	821.12	821.12	9853.44
Interest (Expense)	27.88	27.88		27.88	27.88	27.88	27.88	27.88	27.88	27.88	27.88	27.88	
Interest (Expense)	27.00	27.88		27.00	27.00	27.00	27.00	27.00	27.00	27.88	27.88	27.00	
	849	849	849	849	849	849	849	849	849	849	849	849	10188
BLANK Brofit Boforo Toy	0.40.45.0777	04040 0070	04046.0075	0.40.45,0075	04046 0075	0.40.45.0075	04040 0075	0.40.45 0075	04046 0075	0.40.45 0075	0.40.45 0.075	0.40.45 0.077	1100000 000
Profit Before Tax	94945.2779	94946.3979	94946.3979	94946.3979	94946.3979	94946.3979	94946.3979	94946.3979	94946.3979	94946.3979	94946.3979	94946.3979	1139355.655
BLANK	704 4	704.6	204 C	704 6 5 5 5 5 5		704.6.5.7.7.	2010	704.4.5	704.0.0		704 6		0.770
Income Tax Expense	-7316.250592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-7316.362592	-87796.23911
BLANK				87630.03531									
Profit After Tax	87629.02731												

9. For our next modification, move the **Total Year** Aggregate Member for the *Month* dimension to the beginning of the Columns.

To do this:

- In the Queries & Connections sidebar, double-click on a query to access the **Olation Power Query Editor**.
- Drag and drop the **Total Year** column just before **Jan**.
- Again, you will see the step listed (Reordered Columns)

K∎ 🙂 ▼ File	▼ Olation Sheet Home Transform		luery Editor d Column View											×
llose & Load ▼ Close	Refresh Preview + III Mana Query	ced Editor	Choose Remove Columns - Columns Manage Columns		A↓ Nove ws ▼	Split Column -	Croup	First Row as Hea ace Values	aders 🕶	∰ Merge Queries ▼	Manage Parameters • Parameters	Data sour settings Data Sour	📰 Enter Data	
> >	< √ fx	= Table P	eorder cotumns(# 1	IIICEI CU Mays"	,{"Account	", "Total	Year", "Jan",	"Feb", "Mar	", "Apr	", "May", "Jun", "	Jul",	V Qu	ery Settings	\times
Queries	+ ABC Account		ABC 123 TotalYear	✓ ABC 123	in		ABC 123 Feb	*	ABC 123 Mar	¥ 1	23 Apr		PERTIES	
∂ <u>1</u>	Version			0 Actu	I		Actual		Actual	ļ.	ctual	Nar		
2	BLANK			null		nuli		null		null			ation Sheet1	
3	Sales of Goods			1821084		151757		151757		151757				
4	Sales of Services			496261.2		41355.1		41355.1		41355.1		All	Properties	
5	BLANK			null		nuli		null		null			LIED STEPS	
6	Revenue			2317345.2		193112.1		193112.1		193112.1				-
7	BLANK			null		nuli		null		null			json Source	*
8	Cost of Goods			848562		70713.5		70713.5		70713.5			OlationTable	×
9	Cost of Services			216987		18082.25		18082.25		18082.25			ExpandedOlation	<u> </u>
10) Cost of Sales			1065549		88795.75		88795.75		88795.75			Filtered Rows	*
11	BLANK			null				nun		non			Reordered Columns	
12	Gross Profit			1251796.2		104316.35		104316.35		104316.35		~ 1^		
13	< <										>			

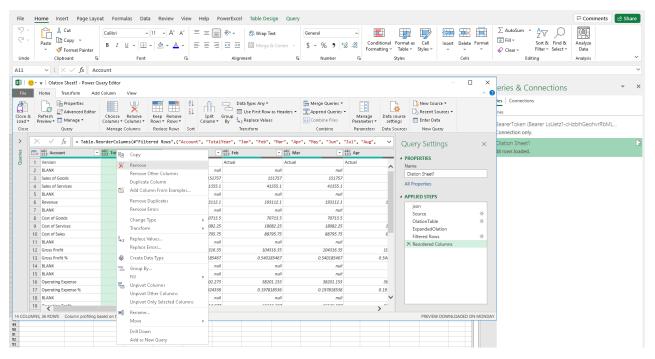
• Click **Close & Load** to update the PowerExcel Slice. Now the aggregate Member *Total Year*, which rolls up all individual months, appears in the first column of the Power Query Table.

	A	В	С	D	E	F	G	Н
1	Database:	PandA_2022_C	onnect					
2	Cube:	Financial Data						
3	Dimensions:	Filter	Version	Actual	[{"dimensionnam			
4		Filter	Year	All	[{"dimensionnar			
5			Entity	All	[{"dimensionnar			
6			Department	All	[{"dimensionnar			
7		Column	Month		[{"dimensionnar			
8		Row	Account		[{"dimensionnar			
9			Hoodan	Thembers(Tersio	[] amenoiorman			
10	OLAPowerQuery							
11		TotalYear 💌	Jan 💌	Feb 💌	Mar 💌	Apr 💌	May 💌	Jun 💌
12	Version		Actual	Actual	Actual	Actual	Actual	Actual /
12	BLANK	0	Motuai	Motuai	Motual	Motual	Motual	Motual r
13	Sales of Goods	1821084	151757	151757	151757	151757	151757	151757
14	Sales of Services	496261.2	41355.1			41355.1	41355.1	41355.1
		436261.2	4 1555, 1	41355.1	41355.1	41555.1	41555.1	41555.1
16 17	BLANK Revenue	2317345.2	193112.1	100110.1	193112.1	193112.1	193112.1	193112.1
		2317345.2	193112.1	193112.1	133112.1	193112.1	193112.1	193112.1
18	BLANK	040500	20240 5	20240 5	20240 5	20240 5	20240 5	20240 5
19	Cost of Goods	848562	70713.5	70713.5		70713.5	70713.5	70713.5
20	Cost of Services	216987	18082.25	18082.25	18082.25	18082.25	18082.25	18082.25
21	Cost of Sales	1065549	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75
22	BLANK							
23	Gross Profit	1251796.2	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35
24	Gross Profit %	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467
25	BLANK							
26	BLANK							
27	Operating Expense	458414.956	38202.273	38201.153		38201.153		38201.153
28	Operating Expense %	0.19781902	0.197824336	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536
	BLANK							
30	Operating Profit	793381.244	66114.077	66115.197	66115.197	66115.197	66115.197	66115.197
31	Operating Profit %	0.342366448	0.342361131	0.342366931	0.342366931	0.342366931	0.342366931	0.342366931
32	BLANK							
33	Other Revenue	24112.8	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4
34	Other (Expense)	-2801.4	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45
35	Other Income (Expense)	21311.4	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95
36	BLANK							
37	EBIT	814692.644	67890.027	67891.147	67891.147	67891.147	67891.147	67891.147
38	BLANK							
39	Interest Revenue	8558.64	713.22	713.22	713.22	713.22	713.22	713.22
40	Interest (Expense)	1133.28	94.44	94.44	94.44	94.44	94.44	94.44
41	Interest	9691.92	807.66	807.66		807.66	807.66	807.66
42	BLANK							
43	Profit Before Tax	824384.564	68697.687	68698.807	68698.807	68698.807	68698.807	68698.807
44	BLANK	021001001	00001.001	00000.001	00000.001	000000001	00000.001	00000.001
45	Income Tax Expense	-81440.59481	-6786.613567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567
46	BLANK	01110.00401	5165.516601	0100.120001	0100.120001	0100.120001	0100.120001	0100.120001
47	Profit After Tax	742943,9692	61911.07343	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143
41	r ronk miter ran	142040.0002	01011.01040	01012.00140	01012.00140	01012.00140	01012.00140	51512.00145

10. For the third modification, we will delete a column. For this example, let us delete the aggregate *Month* member **Total Year**.

To do this:

- In the Queries & Connections sidebar, double-click on a query to access the **Olation Power Query Editor**.
- Right-click on the Total Year column then select Remove.



• The table is once again updated and the action/step listed (**Removed Columns**).

e	Home Transform Ad	d Column View						~
e & d ▼ se	Refresh Preview • Query	Choose Remove Columns • Columns • Manage Columns Red	P Remove	Data Type: Any Data Type: Any	aders • 🚆 Append Queries •	Manage Data Parameters * set	Source Sources New Yours	
		Manage columns - Rea		Indition	combine	Turanicers Data		
	$\times \sqrt{f_X} = Table.F$	emoveColumns(#"Reordered	Columns",{"TotalYear"})			~	Query Settings	>
	ABC Account	ABC Jan	ABC Feb	ABC 123 Mar	ABC 123 Apr	23 May		
	1 Version	Actual	Actual	Actual	Actual	Actual	▲ PROPERTIES	
	2 BLANK	null	null	null	null	^	Name	
	3 Sales of Goods	151757	151757	151757	151757		Olation Sheet1	
	4 Sales of Services	41355.1	41355.1	41355.1	41355.1		All Properties	
	5 BLANK	null	null	null	null		▲ APPLIED STEPS	
	6 Revenue	193112.1	193112.1	193112.1	193112.1	1		
	7 BLANK	null	null	null	null		json Source	*
1	8 Cost of Goods	70713.5	70713.5	70713.5	70713.5		OlationTable	×
	9 Cost of Services	18082.25	18082.25	18082.25	18082.25	1	ExpandedOlation	24
1	10 Cost of Sales	88795.75	88795.75	88795.75	88795.75	8	Filtered Rows	-8
1	11 BLANK	null	null	null	null		Reordered Columns	
1	12 Gross Profit	104316.35	104316.35	104316.35	104316.35	10	× Removed Columns	
1	13 Gross Profit %	0.540185467	0.540185467	0.540185467	0.540185467	0.54		
1	14 BLANK	null	null	null	null			
1	15 BLANK	null	null	null	null			
1	16 Operating Expense	38202.273	38201.153	38201.153	38201.153	38		
1	17 Operating Expense %	0.197824336	0.197818536	0.197818536	0.197818536	0.19		
1	18 BLANK	null	null	null	null	~		
1	19	CC114.077	CC115 107	CC11E 107	CC11E 107	>~		

Click Close & Load to update the PowerExcel Slice. Now you have formatted your PowerExcel Slice to show only the individual months along the columns.

- 4	A	в	С	D	E	F	G	н	1 I	J	К	L	M
1	Database:	PandA_2022_C	onnect										
2	Cube:	Financial Data											
3	Dimensions:	Filter	Version	Actual	[{"dimensionnam								
4		Filter	Year	All	[{"dimensionnam								
5		Filter	Entity	All	[{"dimensionnam								
6		Filter	Department	All	[{"dimensionnar								
7		Column	Month	Members(Jan:Fe	[{"dimensionnam								
8		Bow	Account	Members/Versio	1. N"dimensionnam								
9													
0	OLAPowerQuerv												
ĩ		Jan 💌	Feb 💌	Mar 💌	Apr 💌	Mav 💌	Jun 💌	Jul 💌	Aug 💌	Sep 💌	Oct 💌	Nov 💌	Dec 💌
	Version	Actual	Actual	Actual		Actual	Actual	Actual	Actual	Actual	Actual		Actual
3	BLANK	i lotadi	rio(dai	1 Iotaal	i lokular	rio(da)	i lokular	riotaar	i lokular	- local	- local	1 lottelar	notaan
4	Sales of Goods	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757	151757
5	Sales of Services	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1	41355.1		41355.1	41355.1	41355.1	41355.
6	BLANK	41555.1	41000.1	41555.1	41000.1	41000.1	41000.1	41000.1	41000.1	41000.1	41000.1	41000.1	41000.
° 7	Revenue	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.1	193112.
	BLANK	135112.1	135112.1	135112.1	133112.1	133112.1	133112.1	133112.1	133112.1	133112.1	133112.1	133 HZ. I	133112.
	Cost of Goods	70710 5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5	70713.5
9	Cost of Gervices	70713.5								18082.25			18082.25
0			18082.25	18082.25	18082.25	18082.25 88795.75	18082.25	18082.25			18082.25	18082.25	
1	Cost of Sales	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75	88795.75
	BLANK												
	Gross Profit	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.35	104316.3
	Gross Profit %	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467	0.540185467
	BLANK												
	BLANK												
	Operating Expense	38202.273	38201.153	38201.153	38201.153	38201.153	38201.153	38201.153	38201.153	38201.153	38201.153	38201.153	38201.153
8	Operating Expense ½	0.197824336	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536	0.197818536
9	BLANK												
	Operating Profit	66114.077	66115.197	66115.197	66115.197	66115.197	66115.197	66115.197	66115.197	66115.197	66115.197	66115.197	66115.197
1	Operating Profit %	0.342361131	0.342366931	0.342366931	0.342366931	0.342366931	0.342366931	0.342366931	0.342366931	0.342366931	0.342366931	0.342366931	0.34236693
2	BLANK												
3	Other Revenue	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4	2009.4
4	Other (Expense)	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45	-233.45
5	Other Income (Expense)	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95	1775.95
6	BLANK												
	EBIT	67890.027	67891.147	67891.147	67891.147	67891.147	67891.147	67891.147	67891.147	67891.147	67891.147	67891.147	67891.147
8	BLANK												
9	Interest Revenue	713.22	713.22	713.22	713.22	713.22	713.22	713.22		713.22	713.22	713.22	713.22
0	Interest (Expense)	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44	94.44
1	Interest	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66	807.66
	BLANK												
3	Profit Before Tax	68697.687	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807	68698.807
4	BLANK												
	Income Tax Expense	-6786.613567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567	-6786.725567
6	BLANK												
	Profit After Tax	61911.07343	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143	61912.08143
8		0.071.01040	0.0.12.00110	0.0 42.00110	0.0.00110		0.0.100110		0.0.100110		0.0.12.00110	0.00110	0.00110

3. The Subset Tab and the Calculations Tab

Subsets are a very important feature in PowerExcel, whether they are "Custom" Subsets, created by users in PowerExcel—as explained in this section—or created in Olation®, the modeling engine that PowerExcel reaches for users to plan, analyze and report on data.

What are Subsets and why are they important? in brief, a Subset is a saved list of Dimension members. The importance of Subsets is that they allow users to select saved lists with a click or two to create reports, templates, board books and the like in Excel. In other words, rather than navigate to select the list of Members with each report, etc., the Subset is at hand for immediate access, saving time and effort in PowerExcel.

3.1 Default Subsets

Before describing how a PowerExcel user can create Custom Subsets on his or her own, we note that every Dimension—or, more specifically, every Dimension that has at least one Hierarchy—includes <u>Default Subsets</u>: **ALL, AGGREGATES**, and **DETAILS**, which are described as follows.

(It is worth mentioning again here that the Subset tab becomes available in the Columns and Rows selection boxes in PowerExcel; the Subset tab does not show in the Filter selection box. Note as well that these Default Subset will appear, as below, in ALL CAPS in the Select Members for [Dimension name] dialog when Columns or Rows are double-clicked.

ALL	Returns ALL Members in Rows or Columns in the PowerExcel slice.
AGGREGATES	Returns AGGREGATE Members in Rows or Columns in the PowerExcel slice
DETAILS	Returns DETAIL Members in Rows or Columns in the PowerExcel slice

To show an example of these default Subsets and how choosing any of them will show in a Slice, you can proceed with the following example:

1. First, create an example PowerExcel Slice—the one shown in the next image, made with the Perspective Slice Type, shows selected Filters; *Month* along Columns, and; *Accounts* in the Rows.

	Find R OLA Fx	efresh DRD	C Drill Through erExcel Data	Update Cubes				Connections PowerExc		Clear N ache C	-	guage Change Passwor	
.0 ∨ : × √ fx =@0	LAPivotTa	ble(\$B\$1,\$	3\$2,\$B\$3:\$	E\$3,\$B\$4:\$I	E\$4,\$B\$5:\$	E\$5,\$B\$6:\$	E\$6,\$B\$7:	\$E\$7,\$B\$8:\$	E\$8,\$B\$12,	FALSE, FAL	SE, FALSE, F	ALSE, TRUE)	
A	В	С	D	E	F	G	н	1	J	к	L	м	*
)atabase:	PandA_2	022_Conne	ct										PowerExcel 🔹
iube:	Financial	Data											C Department: Sales
imensions:	Filter	Version	Members	Budget									
	Filter	Year	Members	2021									
	Filter	Entity	Members	Entity A									Columns
	Filter	Departme	Members	Sales									ピ、Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov,
	Column	Month	Range	\$B\$11:\$M	\$11								
	Row	Account	Range	\$A\$12:\$A\$	\$20								
DLAPivotTable													🚰 Rows
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Account: Payroll and related expenses, Distribution, Oc
ayroll and related expenses	990	990	990	990	990	990	990	990	990	990	990	990	
istribution	198	198	198	198	198	198	198	198	198	198	198	198	
coupancy Expenses	0	0	0	0	0	0	0	0	0	0	0	0	<
esearch and Development	99	99	99	99	99	99	99	99	99	99	99	99	Step 1 - Location Step 2 - Slice Type
ales and Marketing	297	7 297	297	297	297	297	297	297	297	297	297	297	Current Sheet: \$A\$1 🖉 Perspective
epreciation	550	550	550	550	550	550	550	550	550	550	550	550	O New Worksheet OB Functions
mortization	55	5 55	55	55	55	55	55	55	55	55	55	55	O New Workbook O Power Analyzer
dministrative Expenses	110	110	110	110	110	110	110	110	110	110	110	110	Step 3 - Additional Options
ther operating Expenses (Income)	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	Hide Empty Rows Allow Excel Functions
													Delete Removed Rows
													Dynamic Row Labels
													Step 4 - Dupdate
> Sheet1 (+)													Step 4 - DUpdate

2. Double-clicking **Month** in the Columns box brings up the *Select Members for Month* dialog; click on the **Subsets tab**—note the default Subsets that appear, indicated by the red arrows in the following image.

Select Members for Month		– 🗆 ×
Members Hierarchy Subsets Calculations		Q 🛛 🛛 🗸
Find: ALL AGGREGATES Closed RealMonths DETAILS SetExpression(CHILDREN,Q1) SetExpression(CHILDREN,W1THMEMBER;Q1)	Σ All # Method # Amount # Jan # Feb # Mar # Apr # May # Jun # Jun # Jul # Apr # May # Jun # Jul # Dat Sep # Oct # Nov # Dec ∑ YTD Jan ∑ YTD Jul ∑ YTD Sep	

Before examining what each of these default Subsets mean we will just make note at this point of the other Subset selections: *Closed* and *RealMonths*, which like the default Subsets have a horseshoe-shaped icon to the left, are Subsets that have been defined in the Olation model (for a description of how these Subsets are created, see the *Nexus Studio* manual); the other Subsets, beginning with "SetExpression", are the subject of the next section—*User-Defined Subsets in PowerExcel.*

3. Select **ALL** on the left, and use the red horseshoe icon (*Clear and Copy Selected Members*), to place ALL on the right. Click the green checkmark, and then Update in the PowerExcel pane on the right. As shown in the next image, the Slice now shows in Columns <u>every Member from the Month dimension</u>. You would need to scroll right to see addition YTD figures, as well as *Q1*, *Q2*, *Q3*, *Q4*, and *Total Year*—i.e., the full set of **ALL** Members for this *Month* dimension.

2 - Calibri			Review		•	erExcel										Σ • <u>A</u> s	-	Comments	් s
Paste Di V Paste V V V		A^ A		= = *		Wrap Text Merge & Ce	enter ~	General \$~%	9 €0	.00 Cor		ormat as Ce Table ~ Style	ll Inse	ert Delete	Format	▼ Z Sor	Ƴ ∠ t& Find & er * Select *		
Jndo Clipboard Is	Font		F <u>u</u>		Alignment		L7	Nu	nber	F2	Stj	yles		Cells		Edi	ting	Analysis	
2 \checkmark : $\times \checkmark f_x$ =SUN	A(E12:P12)																		
A	В	С	D	E	F	G	н	1	J	K	L	м	N	0	Р	Q	R	S	Т
atabase:	PandA_20	22_Conne	ct																
ube:	Financial																		
imensions:	Filter		Member																
	Filter	Year	Member																
	Filter	Entity	Member																
	Filter	Departme																	
	Column	Month	Range	\$B\$11:\$AI															
	Row	Account	Range	\$A\$12:\$A	\$20														
LAPivotTable																			
DAINOCTABLE	All	Method	Amount	lan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep (Oct	Nov	Dec	YTD Jan	YTD Feb	YTD Mar	
ayroll and related expenses	11880						990	990	990	990			990	990	990				
stribution	2376		(198	198		198			198	198	198				
ccupancy Expenses	0						0						0	0					
esearch and Development	1188	0	(99	99	99	99	99	99	99	99	99	99	99	99	99	198	297	
ales and Marketing	3564	0		297	297	297	297	297	297	297	297	297	297	297	297	297	594	891	1
epreciation -	6600	0	(550	550	550	550	550	550	550	550	550	550	550	550	550	1100	1650	2
mortization	660	0	(55	55	55	55	55	55	55	55	5 55	55	55	55	55	110	165	
dministrative Expenses	1320	0		110	110	110	110	110	110	110	110	110	110	110	110	110	220	330	
ther operating Expenses (Income)	-660	0	I (55	-55	-55	-55	-55	-55	-55	-55	i -55	-55	-55	-55	-55	-110	-165	-
			- E																
				11880															
			L																
> Sheet1 +																			

Before we consider the AGGREGATES Subset selection it makes sense to point out something in this spreadsheet—the fact that, in this model at least, there is not only a default ALL Subset, but also an *All* Member. This *All* Member is defined in the Olation model database; it is a sum of all the Detail MEMBERS, which in this case comprise the calendar months *Jan* through *Dec.* Note that in the image above the *All* Member for Row 12, in Cell B12, for *Payroll and other expenses*, is 11800 (boxed in red); Cell E22 (also boxed in red) validates this calculation, i.e., showing the SUM of Cells E12:P12 (blue highlighted).

4. Turning our attention to the AGGREGATES Subset:

Again, **select Cell A10**, where the OLAPivotTable function is, governing what data appears in the Slice: in the PowerExcel pane on the right, double-click on *Month* in the Columns box. Select the **Subset tab**: note that literally ALL Members now appear on the right-hand side, as it is the current selection (see next image).

Select Members for Month		– 🗆 X
Members Hierarchy Subsets Calculations	: 🗆 🛇 ⊃ 🚠 🔁 🛪	Q 🛛 🛛 🗸
Find: Q ALL AGGREGATES Closed RealMonths DETAILS SetExpression(CHILDREN;Q1) SetExpression(CHILDREN;WITHMEMBER;Q1)	Σ All # Method # Amount # Jan # Feb # Mar # Apr # May # Jun # Jun # Jul # Aug # Sep # Oct # Nov # Dec ∑ YTD Jan ∑ YTD Feb ∑ YTD Mar ∑ YTD Apr ∑ YTD Jul ∑ YTD Jul ∑ YTD Aug ∑ YTD Sep	

5. Now select **AGGREGATES** on the left, and replace (again, using the *Clear and Copy Selected Members*) the Members on the right with that Subset. Click the green checkmark and then click Update. The AGGREGATE Members now appear in Columns.

1	A	В	C	D	E	F	G	н	1	J	K	L	м	N	0	Р	Q	R	S	Т
1	Database:	PandA_20)22_Conne	ct																
2	Cube:	Financial	Data																	
3	Dimensions:	Filter	Version	Members	Budget															
4		Filter	Year	Members	2021															
5		Filter	Entity	Members	Entity A															
6		Filter	Departme	Members	Sales															
7		Column	Month	Range	\$B\$11:\$T\$:	11														
8		Row	Account	Range	\$A\$12:\$A\$	20														
9																				
10	OLAPivotTable																			
11		All	YTD Jan	YTD Feb	YTD Mar	YTD Apr	YTD May	YTD Jun	YTD Jul	YTD Aug	YTD Sep	YTD Oct	YTD Nov	YTD Dec	Q1	Q2	Q3	Q4	TotalYear	Closed
12	Payroll and related expenses	11880	990	1980	2970	3960	4950	5940	6930	7920	8910	9900	10890	11880	2970	2970	2970	2970	11880	495
13	Distribution	2376	198	396	594	792	990	1188	1386	1584	1782	1980	2178	2376	594	594	594	594	2376	99
14	Occupancy Expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	Research and Development	1188	99	198	297	396	495	594	693	792	891	990	1089	1188	297	297	297	297	1188	49
16	Sales and Marketing	3564	297	594	891	1188	1485	1782	2079	2376	2673	2970	3267	3564	891	891	891	891	3564	148
17	Depreciation	6600	550	1100	1650	2200	2750	3300	3850	4400	4950	5500	6050	6600	1650	1650	1650	1650	6600	275
18	Amortization	660	55	110	165	220	275	330	385	440	495	550	605	660	165	165	165	165		
9	Administrative Expenses	1320	110	220	330	440	550	660	770	880	990	1100	1210	1320	330	330	330	330	1320	
	Other operating Expenses (Income)	-660	-55	-110	-165	-220		-330	-385	-440		-550		-660	-165	-165		-165		

6. Finally, to show what occurs when we pick the DETAILS Subset: Proceed in like manner as above, select the DETAILS Subset; bring that Subset to the right, and click the green checkmark, then Update. The DETAIL Members for the *Month* dimension appear in the Columns. Note that there are *Method* and *Amount* Members in Columns B and C and a Member called *Agg* in Column P—these are special Members incorporated into the model, which render as Detail Members.

А	В	С	D	E	F	G	н	1	J	К	L	м	N	0	Р
ase:	PandA_20	J22_Conne	ct												
	Financial	Data													
isions:	Filter	Version	Members	Budget											
	Filter	Year	Members	2021											
	Filter	Entity	Members	Entity A											
	Filter	Departme	e Members	Sales											
	Column	Month	Range	\$B\$11:\$P\$	511										
	Row	Account	Range	\$A\$12;\$A	\$20										
votTable															
	Method	Amount	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Agg
l and related expenses	0) (990	990	990	990	990	990	990	990	990	990	990	990	0
oution	0) (198	198	198	198	198	198	198	198	198	198	198	198	0
ancy Expenses	0) (0	0	0	0	0	0	0	0	0	0	0	0	0
rch and Development	0) (99	99	99	99	99	99	99	99	99	99	99	99	0
and Marketing	0) (297	297	297	297	297	297	297	297	297	297	297	297	0
ciation	0) (550	550	550	550	550	550	550	550	550	550	550	550	0
ization	0) (55	55	55	55	55	i 55	55	55	55	55	i 55	55	0
histrative Expenses	0) (110	110	110	110	110	110	110	110	110	110	110	110	0
operating Expenses (Income)	0) (-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	0
nist	rative Expenses	rative Expenses 0	rative Expenses 0 0	rative Expenses 0 0 110	rative Expenses 0 0 110 110	rative Expenses 0 0 110 110 110	rative Expenses 0 0 110 110 110 110	rative Expenses 0 0 110 110 110 110	rative Expenses 0 0 110 110 110 110 110 110	rative Expenses 0 0 110 110 110 110 110 110 110	rative Expenses 0 0 110 110 110 110 110 110 110 110 11	rative Expenses 0 0 110 110 110 110 110 110 110 110 11	rative Expenses 0 0 110 110 110 110 110 110 110 110 11	rative Expenses 0 0 110 110 110 110 110 110 110 110 11	rative Expenses 0 0 110 110 110 110 110 110 110 110 11

3.2 User-Created Subsets

We are now in a position to discuss User-created Subsets. User-created Subsets are defined directly in PowerExcel, via the Subset tab, which is a great option if a subset is specific to a user's interest; he or she may need that subset frequently for setting up reports with the component Dimension members. Keep in mind that, as the Subset is defined locally, it is not shared with other users. (In order to share a Subset across users, it would be better to create/save the Subset in the data model, where all users can reach it.)

The three types of User-created Subsets are as follow:

Wildcard	Returns a list of Members that satisfies the definition of the Wildcard expression.
Regular Expression…	Returns a list of Members that satisfies the definition of the Regular Expression.
Function	Returns a list of Members that satisfies the selected Multidimensional Set Expression

The procedure to create the Subset based on any of the above selections is the same. As shown in the following image:

- 1. First, create a **PowerExcel Slice**—the one below shows selected Filters; *Month* along Columns (*Jan* through *Dec* are selected), and; all *Accounts* in Rows.
- 2. **Double-click** on a Dimension in **Columns** or **Rows**. (Note: keep in mind that the Subset tab appears only for Dimensions placed in Columns or Rows.) In the example below, Accounts, in Rows, was chosen.
- 3. In the Select Members for Accounts (in this example), click on the Subset tab.
- 4. Right-click in the blank area below the Default Subsets (per previous section: ALL, AGGREGATES, DETAILS)—note that a pop-up window (boxed in red in the following image) appears, allowing you to select Add Custom Subset. (There is also a selection for Delete Custom Subset.) The selections for a Customer Subset appear: Wildcard...; Regular Expression...; Function....

Fi	ile <u>Home</u> Insert Page Layout	Formula	as Data	Review	View Help	Powe	erExcel											Con	nments	🖻 Share
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AI	.0 ∨ : × √ <i>fx</i> =@0L	APivotTak	ole(\$B\$1,\$B	\$2,\$B\$3:\$	E\$3,\$B\$4:\$E\$	4,\$B\$5:\$I	E\$5,\$B\$6:\$E\$6	5,\$B\$7:\$E	\$7,\$B\$8:\$E	\$8,\$B\$12,F#	LSE, FALSE	, FALSE, FAI	LSE, TRUE)							~
	A	в	c	_		~														
1.0	Database:	PandA 20)22 Conned	Select Me	embers for Acco	unt							- 0	ı x		Powerl	Excel			- X
_		Financial I	-	Members	Hierarchy Sub	isets Calo	culations		1.5		L 🗖 🗶		Q	8 🗸	11					
_			Version	E Find:		Q				Version			-	•		Database	22 Connect	Cube	ial Data	
4		Filter	Year	· _		<u> </u>				Units				<u> </u>		_	22_Connect	~ Financ	iai Data	~
5		Filter	Entity		REGATES				- I #	Price					ы.	Filters				
6		Filter	Departme							Cost						Version				
7			Month I		425					Revenue						12. Year: 12. Entity:	2021			
8		Row	Account							Cost of Sales Gross Profit							Entity A ment: Sales			
9										Payroll and re	lated evnense	**					mente sales			
10	OLAPiyotTable									Distribution	ace onperior	~								
11		Jan	Feb			Copy	Ctrl+0	С		Occupancy B						🔁 Column	5			
_			Budget			Add Se	lected			Research an		nt .					Jan, Feb, Mar, A	or.May.Jun.Ju	I.Aug.Sep.O	ct.Nov.Dec
_	Units	0					e with Selected			Sales and Ma										
_	Price	0	0							Software Cor	nect Fees Ian Ho									
15		0	0				ustom Subset	•	Wildcard			uis sture-Tech Si	unnort							
_	Revenue	18150	18150			Delete	Custom Subset		Regular E	xpression	10300	state reens	appon			🚷 Rows				
	Cost of Sales	11000							Function								nt: Version, Units	Price Cost De	wanua Cort	of Salar Grad
	Gross Profit	7150								Advances also	Experies					Account	n. version,onne	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.venue,eost	or sures, or os
_	Payroll and related expenses	990								Other operati		Income)								
_	Distribution	198	198							Operating Exp Operating Pro						<				>
_	Occupancy Expenses	0								Other Reven						Step 1 - L	oration	Sten	2 - Slice Type	
	Research and Development	99	99							Other (Expen							nt Sheet: \$A\$1		erspective	
	Sales and Marketing	297							Σ	Other Income	(Expense)			~		O New V			B Functions	
_	Software Connect Fees	0	0	0	0	0	0	0	0	0	0	0	0				Vorkbook		ower Analyz	ar
25	Software Connect Man Hours	0	0	0	0	0	0	0	0	0	0	0	0			U New V	TOTKOOOK		ower Analyz	
26	Software Connect Infrastructure-Tech	0	0	0	0	0	0	0	0	0	0	0	0			Step 3 - A	dditional Option	15		
27 0	Depreciation	550	550	550	550	550	550	550	550	550	550	550	550			Hide E	mpty Rows	Allow	/ Excel Funct	ions
	Amortization	55	55	55	55	55	55	55	55	55	55	55	55			Delete	Removed Rows	Form	at Cells by T	ype
29	Administrative Expenses	110	110	110	110	110	110	110	110	110	110	110	110			Dynan	nic Row Labels			
30	Other operating Expenses (Income)	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55							
31	Operating Expense	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244			Step 4 -	🔢 Update			
22	Onorating Profit	1000	1000	1000	Nonc	1000	1000	1000	1000	1000	1000	AGOC	None		•	6				
4	Sheet1 (+)							E 4						•						
Read	dy Calculate 🐻 🏷 Accessibility: Goo	id to go														E			-	- + 100%

Function...

The **Function...** selection is the simplest to explain, and currently there are 3 selections from the drop-down menu: **CHILDREN**; **MEMBERANDCHILDREN**, and; **DESCENDENTS**, shown in the following image.

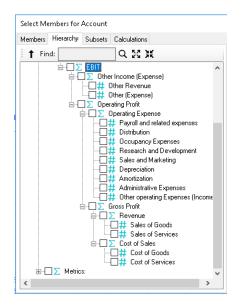
Select Members for /	Account						—	\times
Members Hierarchy	Subsets	Calculations			 ×		Q	8 🗸
Find:	Q	<u> </u>		Σ All # Version Σ Revenue Σ Cost of Sales		1		,
			al Set Expressi Account CHILDREN	IDCHILDREN	×	es It Income)		
			OK	Cancel # Other (Expense) ∑ Other Income (E ∑ EBIT # Interest Revenu # Interest (Expens ∑ Interest ∑ Profit Before Tax	xpense) e e)			

The selections will return Members as follows:

CHILDREN	Returns Child Members of the selected Member's immediate hierarchy
MEMBERAND CHILDREN	Returns the selected Member and Child Members of its immediate hierarchy
DESCENDENTS	Returns all Members—including sub-hierarchies and their Member—that aggregate into the selected Member

Example: CHILDREN

We can now take a look at an example of what each of the **Functions...** selections will return, in consideration of the *Accounts* dimension, and a portion of its hierarchy structure, which shows on the left-hand side of the Select Members for Account window, shown below:



 In the Subset tab, right-click in the blank area and select Add Custom Subset; select Function..., then chose CHILDREN from the drop-down. Type EBIT. The window will look as follows:

Custom Subset	×
Multidimensional Set Expression	
Dimension: Account	
Expression: CHILDREN	~
Member: EBIT	
OK	Cancel

- Click OK. Note that the Custom Subset is now listed in the Subset tab, as below: **SetExpression(CHILDREN;EBIT)**, with a Custom Subset icon to the left.

Select Me	embers for.	Account	
Members	Hierarchy	Subsets	Calculations
Find:		C	2
📋 🗅 AGGI	REGATES		
⊃ det/	AILS		
🛛 😺 SetE:	kpression(CH	IILDREN;E	BIT)

- By using this Custom Subset in Rows in an updated PowerExcel Slice, the result will be as follows (see boxed areas), showing *Other Income (Expenses)* and *Operating Profit*, which are the 2 Child Members of EBIT's immediate hierarchy (blue arrow).

А	В	C	D	E		F	G	н	1	J	К	L	М	N
Database:	PandA_20	22_Conne	ct											
Cube:	Financial	Data												
Dimensions:	Filter	Version	Members	Budget		Select Men	nbers for	Account						
	Filter	Year	Members	2021		Members	Hierarchy	Subsets	Calculations				⊃ 🚠 🗖	x.
	Filter	Entity	Members	Entity A	1			040000	_				r Income (Exp	
i	Filter	Departme	Members	Sales		f Find			Q 28 X	R.			r income (Exp ating Profit	snsej
	Column	Month	Range	\$B\$11:\$M	\$11								ading i Tolik	
	Row	Account	Range	\$A\$12:\$A\$	\$13			After Tax						
								come Tax B	Expense					
0 OLAPivotTable								rofit Before	Тах					
1	Jan	Feb	Mar	Apr	May			Interest						
Other Income (Expense)	82.5	82.5	82.5	82.5				EBIT	r Income (Exp	ensel				
Operating Profit	4906	4906	4906	4906				_∑ Oper		0.100)				
4						÷	∑ Metric	s:						
5														
6														
7														

Example: CHILDREN

- Follow the same steps as above to create a MEMBERANDCHILDREN Custom Subset for EBIT, the result of which will be a selection that looks as follows:

Elements in the second contract of the sec

- Upon making this Custom Subset the selection for Rows and Updating the PowerExcel Slice, the spreadsheet will look as follows:

	А	В	С	D	E	F	G	н	I.	J	К	L	м
1	Database:	PandA_20	22_Conne	ct									
2	Cube:	Financial I	Data										
3	Dimensions:	Filter	Version	Members	Budget								
4		Filter	Year	Members	2021								
5		Filter	Entity	Members	Entity A								
6		Filter	Departme	Members	Sales								
7		Column	Month	Range	\$B\$11:\$M	\$11							
8		Row	Account	Range	\$A\$12:\$A	514							
9													
10	OLAPivotTable												
11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	EBIT	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5
13	Other Income (Expense)	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5
14	Operating Profit	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906
15													

Example: DESCENDENTS

- Again, follow the same steps to create a DESCENDENTS Custom Subset for EBIT, the result of which will be a selection that looks as follows.

💹 SetExpression(DESCENDENTS;EBIT)

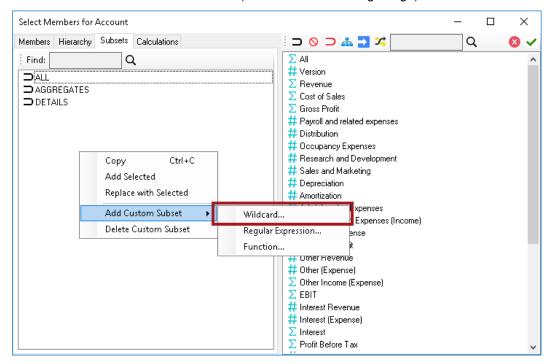
- Upon making this Custom Subset the selection for Rows and Updating the PowerExcel Slice, the spreadsheet will look as follows (reference the Account hierarchy a few pages back to validate all the DESCENDENT Members):

	A	В	С	D	E	F	G	н	1	J	К	L	м
1	Database:	PandA_20	22_Conne	zt									
2	Cube:	Financial	Data										
3	Dimensions:	Filter	Version	Members	Budget								
4		Filter	Year	Members	2021								
5		Filter	Entity	Members	Entity A								
6		Filter	Departme	Members	Sales								
7		Column	Month	Range	\$B\$11:\$M								
8		Row	Account	Range	\$A\$12:\$A	32							
9													
10	OLAPivotTable												
11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	Other Income (Expense)	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5
13	Other Revenue	110	110	110	110	110	110	110	110	110	110	110	110
14	Other (Expense)	-27.5	-27.5	-27.5	-27.5	-27.5		-27.5	-27.5		-27.5	-27.5	-27.5
15	Operating Profit	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906
16	OperatingExpense	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244
17	Payroll and related expenses	990	990	990	990	990	990	990	990	990	990	990	990
18	Distribution	198	198	198	198	198	198	198	198	198	198	198	198
19	Occupancy Expenses	0	0	0	0	0	0	0	0	0	0	0	0
20	Research and Development	99	99	99	99	99	99	99	99	99	99	99	99
21	Sales and Marketing	297	297	297	297	297	297	297	297	297	297	297	297
22	Depreciation	550	550	550	550	550	550	550	550	550	550	550	550
23	Amortization	55	55	55	55	55	55	55	55	55	55	55	55
24	Administrative Expenses	110	110	110	110	110	110	110	110	110	110	110	110
25	Other operating Expenses (Income)	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55
26	Gross Profit	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150
27	Revenue	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150
28	Sales of Goods	13200	13200	13200	13200	13200	13200	13200	13200	13200	13200	13200	13200
29	Sales of Services	4950	4950	4950	4950	4950	4950	4950	4950	4950	4950	4950	4950
30	Cost of Sales	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000
31	Cost of Goods	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600
32	Cost of Services	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400

Wildcard...

The **Wildcard...** selection allow a PowerExcel user to type in one of several standard Wildcard characters—an asterisk ("*"), question mark ("?"), brackets ("[]"), etc.—to return a list of Members that satisfies the definition of the Wildcard expression.

- As with the Function... selection, in the Select Members for [Dimension] window (in our example, Accounts), on the left-hand side, right-click in the blank area; this time select Add Custom Subset→Wildcard... (shown in the following image)



In the resulting Custom Subset dialog, the following example uses a leading asterisk to return Members that include revenue, i.e., the Wildcard expression: *revenue.

Custom Subset			×
-Wildcard Expre	ession		
Dimension:	Account		
Expression:	*revenue		
OK		Cancel	

After clicking OK, the Subset using that Wildcard expression will be listed on the left, as shown below:

Custom Subset	Custom Subset							
Wildcard Expression								
Dimension:	Account							
Expression:	*revenue							
OK		Cancel						

- 💹 Wildcard(*revenue)
- Upon making this Wildcard Subset the selection for Rows and Updating the PowerExcel -Slice, the spreadsheet will look as follows-note that Accounts with the expression "revenue" (capitalization is not required in the Wildcard search) are returned:

	А	В	С	D	E	F	G	н	1	J	К	L	M
1	Database:	PandA_20	22_Connec	:t									
2	Cube:	Financial [Data										
3	Dimensions:	Filter	Version	Members	Budget								
4		Filter	Year	Members	2021								
5		Filter	Entity	Members	Entity A								
6		Filter	Departme	Members	Sales								
7		Column	Month	Range	\$B\$11:\$M	\$11							
8		Row	Account	Range	\$A\$12;\$A	\$14							
9													
10	OLAPivotTable												
11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	Revenue	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150
13	Other Revenue	110	110	110	110	110	110	110	110	110	110	110	110
14	Interest Revenue	22	22	22	22	22	22	22	22	22	22	22	22
15													

Regular Expression... Not Available for this version

Power**Excel**

3.3 **Dynamic Row (Labels)**

It is appropriate to speak of the PowerExcel Slice option **Dynamic Row (Labels)** in this section concerning Subsets. Enabling Dynamic Row (Labels)—the checkbox shown in the next image, which is a detail of the bottom portion of the PowerExcel sidebar—ensures that if a new Member(s) is added to a Dimension, and if that Member(s) is part of a Subset (as will be shown), the Member(s) will appear when a workbook is refreshed or opened.

Step 3 - Additional Option	ns
Hide Empty Rows	Allow Excel Functions
Delete Removed Rows	🗹 Format Cells by Type
Dynamic Row Labels	
Step 4 - 🔲 Update	

- Assume that a PowerExcel Slice was created with the SetExpression(DESCENDENTS;EBIT) selected as a Subset in Rows, as shown earlier. The Rows of the Slice looks as follows:

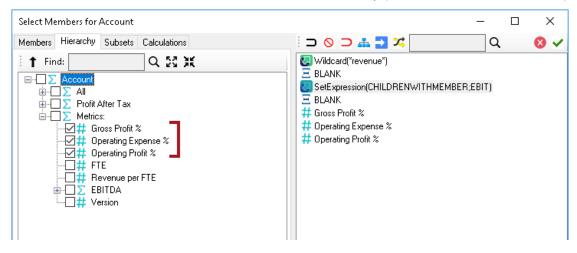
OLAPivotTable							
	Jan	Feb	Mar	Apr	May	Jun	Jul
Other Income (Expense)	82.5	82.5	82.5	82.5	82.5	82.5	82.5
Other Revenue	110	110	110	110	110	110	110
Other (Expense)	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5
Operating Profit	4906	4906	4906	4906	4906	4906	4906
Operating Expense	2244	2244	2244	2244	2244	2244	2244
Payroll and related expenses	990	990	990	990	990	990	990
Distribution	198	198	198	198	198	198	198
Occupancy Expenses	0	0	0	0	0	0	0
Research and Development	99	99	99	99	99	99	99
Sales and Marketing	297	297	297	297	297	297	297
Depreciation	550	550	550	550	550	550	550
Amortization	55	55	55	55	55	55	55
Administrative Expenses	110	110	110	110	110	110	110
Other operating Expenses (Income)	-55	-55	-55	-55	-55	-55	-55
Gross Profit	7150	7150	7150	7150	7150	7150	7150

- Assume next that a new Account was added—*Utilities*—which in the underlying model appears under *Administrative Expenses*. Upon refresh of the Slice (or reopening of a Slice), it will now look as follows (shading and bold font added):

21	Sales and Marketing	297	297	297	297	297	297	297
22	Depreciation	550	550	550	550	550	550	550
23	Amortization	55	55	55	55	55	55	55
24	Administrative Expenses	110	110	110	110	110	110	110
25	UTILITIES	0	0	0	0	0	0	0
26	Other operating Expenses (Income)	-55	-55	-55	-55	-55	-55	-55
27	Gross Profit	7150	7150	7150	7150	7150	7150	7150
28	Revenue	18150	18150	18150	18150	18150	18150	18150

3.4 Combining Subset(s) and Selected Members in a Slice

PowerExcel allows users to combine Subsets and selected Members in the creation of a Slice, which provides great flexibility when building reports. The following image shows a *Select Members for Accounts* window with, on the right, two of the User-created Subsets from previous examples (a Wildcard and a SetExpression subset), with a BLANK row between them; then, following another BLANK row, three selected Members from the Metrics hierarchy (shown with bracket on the left).



When the Slice is updated to show these Accounts in rows, the worksheet will look as follows:

10	OLAPivotTable										
11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	С
12	Revenue	18150	18150	18150	18150	18150	18150	18150	18150	18150	
13	Other Revenue	110	110	110	110	110	110	110	110	110	
14	Interest Revenue	22	22	22	22	22	22	22	22	22	
15											
16	EBIT	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	4988.5	
17	Other Income (Expense)	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	
18	Operating Profit	4906	4906	4906	4906	4906	4906	4906	4906	4906	
19											
20	Gross Profit %	39%	39%	39%	39%	39%	39%	39%	39%	39%	
21	Operating Expense %	12%	12%	12%	12%	12%	12%	12%	12%	12%	
22	Operating Profit %	27%	27%	27%	27%	27%	27%	27%	27%	27%	

As with all PowerExcel Slices, this worksheet can be saved locally, or using the Save function, so that other users connected to the Cloud-based model can see it.

3.5 Calculations Tab

PowerExcel can perform on-the-fly aggregations on any axis (filter, row, column), which can then be used (and saved) in any report. Because these are aggregations, the specific calculations concern addition, subtraction and weighted addition.

We will consider the following example, assuming that the sum of Jun + Jul + Aug is relevant to an understanding of the business—these months are highlighted in the image below.

A	В	С	D	E	F	G	н	1	J	К	L	м
1 Database:	PandA_20	122_Conne	ct									
2 Cube:	Financial	Data										
3 Dimensions:	Filter	Version	Members	Budget								
4	Filter	Year	Members	2021								
5	Filter	Entity	Members	Entity A								
6	Filter	Departme	Members	Sales								
7	Column	Month	Range	\$B\$11:\$M	\$11							
8	Row	Account	Members	Other Inco	Other Inco	ome (Expei	nse), Othei	r Revenue,	Other (Exp	ense), Ope	erating Prof	iit, Operati
9												
10 OLAPivotTable												
11	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12 Other Income (Expense)	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5
13 Other Revenue	110	110	110	110	110	110	110	110	110	110	110	110
14 Other (Expense)	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5
15 Operating Profit	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906	4906
16 Operating Expense	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244
17 Payroll and related expenses	990	990	990	990	990	990	990	990	990	990	990	990
18 Distribution	198	198	198	198	198	198	198	198	198	198	198	198
19 Occupancy Expenses	0	0	0	0	0	0	0	0	0	0	0	0
20 Research and Development	99	99	99	99	99	99	99	99	99	99	99	99
21 Sales and Marketing	297	297	297	297	297	297	297	297	297	297	297	297
22 Depreciation	550	550	550	550	550	550	550	550	550	550	550	550
23 Amortization	55	55	55	55	55	55	55	55	55	55	55	55
24 Administrative Expenses	110	110	110	110	110	110	110	110	110	110	110	110
25 Other operating Expenses (Income)	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55
26 Gross Profit	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150	7150
27 Revenue	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150	18150
28 Sales of Goods	13200	13200	13200	13200	13200	13200	13200	13200	13200	13200	13200	13200
29 Sales of Services	4950	4950	4950	4950	4950	4950	4950	4950	4950	4950	4950	4950
30 Cost of Sales	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000
31 Cost of Goods	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600
32 Cost of Services	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400

- To add a calculation, double-click on a Dimension in the Filter, Column or Row box of the sidebar—here, below, the *Select Members for Month* window appears for *Month*.
- Click on the **Calculations tab**, then right-click in the empty space; in the pop-up window, the selection **Add Calculation** appears, as highlighted below.

Select Member:	s for Month		_		×
Members Hiera	rchy Subsets Calculations	: 🗆 🛇 ⊃ 🚠 🔁 端		Q	
Find:	Q Copy Add Selected Replace with Selected Add Calculation Delete Calculation	# Jan # Feb # Mar # Apr # May # Jun # Jul # Aug # Sep # Oct # Nov # Dec			

- The *Custom Calculation for [Dimension]* window appears, as shown below, for the *Month* dimension.

Custom Calculation for Month			_	\times
fembers Hierarchy Subsets		$\supset \oslash \supset$		8 🗸
↓ <u>A</u> - · ▼	4 -			/
# Method	^			
# Amount				
# Jan				
# Feb				
# Mar				
# Apr				
# May				
# Jun				
# Jul				
# Aug				
# Sep				
# Oct				
# Nov				
# Dec				
∑ YTD Jan				
∑ YTD Feb				
∑ YTD Mar	~			
	•			

When you highlight Jun, Jul and Aug, then drag them to the right, you will see an expression of the 3 Members added: Jun + Jul + Aug, as shown below. NOTE: to do a Subtraction, replace the plus sign ("+") with a minus sign; to make a weighted calculation of a Member, use a fraction (e.g., .05) within square brackets immediately following the Member name (e.g., [.05]).

Custom Calculation f	or Month			_	×
Members Hierarchy	Subsets				8 🗸
# dethod # Amount # Jan # Feb # Mar # Apr # May # Jun # Jul # Aug # Sep	• ¥ A	Jun + J	ul + Aug		~

- Click the green checkmark to **Save Custom Calculation**. The calculation will now appear in the Calculations tab, as shown in the following image. (The Members displayed in the current Slice appear on the right.)

Select Members for Month		– 🗆 X
Members Hierarchy Subsets Calculations	🗆 🔾 🔿 🚠 🔁 🔀	Q 📀 🗸
Find: Q	# Jan # Feb	

- You can now drag the Custom Calculation to its logical place on the right in the Select Members for Month window (as shown below); then, when you click the green checkmark, and **Update** the Slice, the worksheet will show the new calculated Member following *Aug* in the workbook (highlighted and boxed in the last image).

Select Members for Month		- 0	×
Members Hierarchy Subsets Calculations		Q	8 🗸
Find: T T T T T T T T T T T T T	# Jan # Feb # Mar # Apr # Jun # Jun # Jul # Aug # Jun + Jul + Aug # Sep # Oct # Nov # Dec		

	А	В	С	D	E	F	G	н	1	J	К	L	м	N
1	Database:	PandA_20) 22_Conne	ct										
2	Cube:	Financial	Data											
3	Dimensions:	Filter	Version	Members	Budget									
4		Filter	Year	Members	2021									
5		Filter	Entity	Members	Entity A									
б		Filter	Departme	Members	Sales									
7		Column	Month	Range	\$B\$11:\$N	\$11								
8		Row	Account	Members	Other Inc	Other Inc	ome (Expe	nse), Other	Revenue,	Other (Expense	e), Operatir	ng Profit, O	perating E>	(pense, Pay
9														
10	OLAPivotTable													
11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Jun + Jul + Aug	Sep	Oct	Nov	Dec
12	Other Income (Expense)	82.5	82.5	82.5	82.5	82.5	82.5	82.5	82.5	247.5	82.5	82.5	82.5	82.5
13	Other Revenue	110	110	110	110	110	110	110	110	330	110	110	110	110
14	Other (Expense)	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5	-82.5	-27.5	-27.5	-27.5	-27.5
15	Operating Profit	4906	4906	4906	4906	4906	4906	4906	4906	14718	4906	4906	4906	4906
16	Operating Expense	2244	2244	2244	2244	2244	2244	2244	2244	6732	2244	2244	2244	2244
17	Payroll and related expenses	990	990	990	990	990	990	990	990	2970	990	990	990	990
18	Distribution	198	198	198	198	198	198	198	198	594	198	198	198	198
19	Occupancy Expenses	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Research and Development	99	99	99	99	99	99	99	99	297	99	99	99	99
21	Sales and Marketing	297	297	297	297	297	297	297	297	891	297	297	297	297
22	Depreciation	550	550	550	550	550	550	550	550	1650	550	550	550	550
23	Amortization	55	55	55	55	55	55	55	55	165	55	55	55	55
24	Administrative Expenses	110	110	110	110	110	110	110	110	330	110	110	110	110
25	Other operating Expenses (Income)	-55	-55	-55	-55	-55	-55	-55	-55	-165	-55	-55	-55	-55
26	Gross Profit	7150	7150	7150	7150	7150	7150	7150	7150	21450	7150	7150	7150	7150
27	Revenue	18150	18150	18150	18150	18150	18150	18150	18150	54450	18150	18150	18150	18150
28	Sales of Goods	13200	13200	13200	13200	13200	13200	13200	13200	39600	13200	13200	13200	13200
29	Sales of Services	4950	4950	4950	4950	4950	4950	4950	4950	14850	4950	4950	4950	4950
30	Cost of Sales	11000	11000	11000	11000	11000	11000	11000	11000	33000	11000	11000	11000	11000
31	Cost of Goods	6600	6600	6600	6600	6600	6600	6600	6600	19800	6600	6600	6600	6600
32	Cost of Services	4400	4400	4400	4400	4400	4400	4400	4400	13200	4400	4400	4400	4400

4. Entering Data in a PowerExcel Slice

This section concerns the important topic of entering data into PowerExcel—essentially, populating a data model by entering numbers in a Slice. Most often this kind of activity is done as part of a planning (budgeting, forecasting, etc.) exercise, and it includes multiple users working collaboratively on a shared Cloud-based model. With that in mind, the section immediately below demonstrates how to enter Budget data simply by typing in numbers.

The second section—also relevant to a planning exercise—shows how to work with a driver-based template to arrive at forecast numbers.

4.1 "Write Back" into a PowerExcel Slice – Typing in Numbers

For this exercise, we will enter <u>Forecast</u> data for two Operating Expense accounts: Administrative *Expenses* and *UTILITIES* (referenced in an earlier exercise). We will begin by creating a simple PowerExcel Slice with key accounts along with all Operating Expense accounts—these will appear in Rows. In Columns, we will show *Jan, Feb, Mar, Q1, Apr, May, Jun, Q2*, and *YTD Jun*. As you will see, entering numbers for Detail Members will result in calculations for relevant Aggregates.

Important: Remember that you can enter data only for Detail Member "intersections", meaning, ALL the selections (whether in Filters, Column or Row) must have detail Members at the intersection (cell) where you want to enter data.

 We will begin by creating the data entry Slice described above. The Slice will look as shown below.

Note: In this Slice, cells shaded in yellow are Detail intersections; unshaded cells are Aggregate intersections and will show calculations resulting from entries made in their 'Child Members'.

	А	В	С	D	E	F	G	н	I	J
1	Database:	PandA_20	22_Conne	ct						
2	Cube:	Financial	Data							
3	Dimensions:	Filter	Version	Members	Forecast					
4		Filter	Year	Members	2022					
5		Filter	Entity	Members	Entity B					
6		Filter	Departme	Members	Sales					
7		Column	Month	Range	\$B\$11:\$J\$	11				
8		Row	Account	Range	\$A\$12:\$A\$	\$33				
9										
10	OLAPivotTable									
11		Jan	Feb	Mar	Q1	Apr	May	Jun	Q2	YTD Jun
12	Profit After Tax	0	0	0	0	0	0	0	0	0
13	Income Tax Expense	0	0	0	0	0	0	0	0	0
14	Interest	0	0	0	0	0	0	0	0	0
15	EBIT	0	0	0	0	0	0	0	0	0
16	Other Income (Expense)	0	0	0	0	0	0	0	0	0
17	Operating Profit	0	0	0	0	0	0	0	0	0
18	Operating Expense	0	0	0	0	0	0	0	0	0
19										
20	Payroll and related expenses	0	0	0	0	0	0	0	0	0
21	Distribution	0	0	0	0	0	0	0	0	0
22	Occupancy Expenses	0	0	0	0	0	0	0	0	0
23	Research and Development	0	0	0	0	0	0	0	0	0
24	Sales and Marketing	0	0	0	0	0	0	0	0	0
25	Depreciation	0	0	0	0	0	0	0	0	0
26	Amortization	0	0	0	0	0	0	0	0	0
27	Administrative Expenses	0	0	0	0	0	0	0	0	0
28	UTILITIES	0	0	0	0	0	0	0	0	0
29	Other operating Expenses (Income)	0	0	0	0	0	0	0	0	0
30										
31	Gross Profit	0	0	0	0	0	0	0	0	0
32	Revenue	0	0	0	0	0	0	0	0	0
33	Cost of Sales	0	0	0	0	0	0	0	0	0
~ *										

 We will begin entering forecast data for the Administrative Expenses and UTILITIES subaccounts: Type figures for these accounts for the individual Month members Jan, Feb, Mar, and Apr. Example figures are shown in the next image (red circled), which is a detail of Operating Expenses. Note all the zero figures for the Aggregate Member Operating Expenses, at the top, and for Q1, Q2, and YTDJun (all blue circled).

18	Operating Expense	0	0	0	0	0	0	0	0	0
19										
20	Payroll and related expenses	0	0	0	0	0	0	0	0	0
21	Distribution	0	0	0	0	0	0	0	0	0
22	Occupancy Expenses	0	0	0	0	0	0	0	0	0
23	Research and Development	0	0	0	0	0	0	0	0	0
24	Sales and Marketing	0	0	0	0	0	0	0	0	0
25	Depreciation	0	0	0	0	0	0	0	0	0
26	Amortization	0	0	0	0	0	0	0	0	0
27	Administrative Expenses	55	55	55		44	0	0		0
28	UTILITIES	99	88	77	0	66	0	0	0	0
29	Other operating Expenses (Income)	0	0	0	0	0	0	0	0	0

3. Press **F9** to refresh the PowerExcel Slice. Notice that the columns and rows for Aggregates are now also populated with data. These columns and rows show the results of the hierarchies in the *Account* and *Month* dimensions.

	Jan	Feb	Mar	Q1	Apr	May _	lun	Q2	YTD Jun
Operating Expense	154	143	132	429	110	0	0	110	539
Payroll and related expenses	0	0	0	0	0	0	0	0	0
Distribution	0	0	0	0	0	0	0	0	0
Occupancy Expenses	0	0	0	0	0	0	0	0	0
Research and Development	0	0	0	0	0	0	0	0	0
Sales and Marketing	0	0	0	0	0	0	0	0	0
Depreciation	0	0	0	0	0	0	0	0	0
Amortization	0	0	0	0	0	0	0	0	0
Administrative Expenses	55	55	55	165	44	0	0	44	209
UTILITIES	99	88	77	264	66	0	0	66	330
Other operating Expenses (Income)	0	0	0	0	0	0	0	0	0

4. Also, we can observe that the entry of figures for *Administrative Expenses* and *UTILITIES* has had an impact throughout the model, up to *Operating Profit*, *EBIT* and *Profit After Tax*.

	Jan	Feb	Mar	Q1	Apr	May	Jun	Q2	YTD Jun
Profit After Tax	-154	-143	-132	-429	-110	0	0	-110	-539
Income Tax Expense	0	0	0	0	0	0	0	0	0
Interest	0	0	0	0	0	0	0	0	0
EBIT	-154	-143	-132	-429	-110	0	0	-110	-539
Other Income (Expense)	0	0	0	0	0	0	0	0	0
Operating Profit	-154	-143	-132	-429	-110	0	0	-110	-539

5. Now that you have entered figures, this data is saved back to the PowerExcel Cloudbased model. Therefore, any new Slice that you create will show the data correctly populated within the model.

4.2 Driver-Based Data Entry

This final example of data entry in PowerExcel concerns the use a "driver-based" system for generating planning (e.g., budget and forecast, etc.) numbers. As we will show, not only are there numerous methods of projecting/spreading numbers, but individual data entry into cells is also possible in combination with these methods.

Let's examine first an **Income Statement** report, shown below, for **The Great Financials Company**. This spreadsheet not only reflects the past few months' figures, but also includes numbers related to Forecast: this is indicated by the fact that the *Version* dimension indicates *Forecast* (circled) and even shows in Row 13 the *Version* for each *Year* and *Month* (also circled). Cleverly, the model detects the current month, and reflects the correct Version as a result: thus, at the time this spreadsheet was being used, *2021 April* shows *Actual*, while *May 2021* and the following months show Forecast (all zeros).

Important: The spreadsheet shown following is for example purposes—it will not match exercises you have done up to this point. In this spreadsheet, almost all of the Forecast *May* through *Dec* has been filled in. This will allow us to demonstrate an account with existing numbers (*Revenue*, in this example) as the basis for figures in another forecast account (*Sales and Marketing*).

A	В	С	D	E	F	G	н	1	J	К	L	М	N	0	Р
	PandA_2021_C	onnect													
	Financial Data														
	Filter		Members	Forecast											
	Filter		Members 📍	Entity A											
	Filter		Members	Administration											
The Great Financials	Column1		Range	\$B\$11:\$AG\$11											
Company	Column2		Range	\$B\$12:\$AG\$12											
'Where everyone gets to go home on time'	Row	Account	Subsets	Members(Ver											
ULAPIVOCI ADIE	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
	Method		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total¥ea
Version			Actual	Actual	Actual	Actual	Forecast								
			-												
Sales of Goods			15,194	15,194	15,194	15,194	9,240	9,240	9,240	9,240	9,240	9,240	9,240	9,240	134,6
Sales of Services			995	995	995	995									3,9
Revenue			16,189	16,189	16,189	16,189	9,240	9,240	9,240	9,240	9,240	9,240	9,240	9,240	138,6
						,	-,	-,	-,		-,		-,	-,	
Cost of Goods			6,474	6,474	6,474	6,474	3,234	3,234	3,234	3,234	3,234	3,234	3,234	3,234	51,7
Cost of Services			80	80	80	80	2,079	2,079	2,079	2,079	2,079	2,079	2,079	2,079	16,9
Cost of Sales			6,554	6,554	6,554	6,554	5,313	5,313	5,313	5,313	5,313	5,313	5,313	5,313	68,7
Gross Profit			9,635	9,635	9,635	9,635	3,927	3,927	3,927	3,927	3,927	3,927	3,927	3,927	69,9
Gross Profit %			59.5%		59.5%	59.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	50
arosarrojn ie	-		55.5%	55.5%	33.3%	33.3%	42.336	42.5%	42.3%	42.37	42.3%	42.3%	42.5%	42.510	50
Payroll and related expenses			1,134	1,134	1,134	1,134	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	13,7
Distribution			342	342	342	342	924	924	924	924	924	924	924	924	8,7
Occupancy Expenses			642	642	642	642	231	231	231	231	231	231	231	231	4,4
Research and Development	•		123		123	123	462	462	462	462	462	462	462	462	4,1
Sales and Marketing			(324)	(324)	(324)	(324)									(1,2
Depreciation			696		696	696	12	12	12	12	12	12	12	12	2,1
Amortization			66		66	66	6	6	6	6	6	6	6	6	
Administrative Expenses			127	127	127	127	231	231	231	231	231	231	231	231	2,5
UTILITIES			99		99	99									
Other operating Expenses (Income)			(68)	(68)	(68)	(68)	173	173	173	173	173	173	173	173	1,:
Operating Expense			2,739		2,739	2,739	3,194	3,194	3,194	3,194	3,194	3,194	3,194	3,194	36,5
Operating Expense %			16.9%	16.9%	16.9%	16.9%	34.6%	34.6%	34.6%	34.6%	34.6%	34.6%	34.6%	34.6%	26

We will now utilize the pre-built plan modeling methods, evident in the shaded, left-most columns, to enter both a *Method* and an *Amount* to define and calculate driver-based figures for Forecast *Sales and Marketing* and *UTILITIES* for the months *May* forward:

- 1. Type **Revenue** into the cell to the right of *Sales and Marketing*, Row 32, in the Method column (indicated by the red arrow). This will calculate an amount for each of the Forecast months on the basis of a **percentage of Revenue**, which figure you will indicate next. (Note at this point that monthly Revenue is indicated in Row 18).
- 2. Next, type **.08** (thus, 8 percent) in the cell to the right, which is in the Amount column (indicated by a blue arrow). Hit **Enter**.

3. Press **F9**. Note that *Sales and Marketing* Forecast figures, based on an 8 percent calculation of Revenue, now show in the months *May* forward (see circled, next image, both *Revenue* and the calculated results for *Sales and Marketing*).

11	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
12	Method									Aug					Total¥ear
13 Version			Actual	Actual	Actual	Actual	Forecast								
14															
15 Sales of Goods			15,194	15,194	15,194	15,194	9,240	9,240	9,240	9,240	9,240	9,240	9,240	9,240	134,696
16 Sales of Services			995	995	995	995									3,980
17						_									
18 Revenue			16,189	16,189	16,189	16,189	9,240	9,240	9,240	9,240	9,240	9,240	9,240	9,240	138,676
19															
20 Cost of Goods			6,474	6,474	6,474	6,474	3,234	3,234	3,234	3,234	3,234	3,234	3,234	3,234	51,766
21 Cost of Services			80	80	80	80	2,079	2,079	2,079	2,079	2,079	2,079	2,079	2,079	16,953
22															
23 Cost of Sales			6,554	6,554	6,554	6,554	5,313	5,313	5,313	5,313	5,313	5,313	5,313	5,313	68,719
24															
25 Gross Profit			9,635	9,635	9,635	9,635	3,927	3,927	3,927	3,927	3,927	3,927	3,927	3,927	69,957
26 Gross Profit %			59.5%	59.5%	59.5%	59.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	50.4%
27															
28 Payroll and related expenses			1,134	1,134	1,134	1,134	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	13,777
29 Distribution			342	342	342	342	924	924	924	924	924	924	924	924	8,762
30 Occupancy Expenses			642	642	642	642	231	231	231	231	231	231	231	231	4,416
31 Research and Development			123	123	123	123	462	462	462	462	462	462	462	462	4,188
32 Sales and Marketing	Revenue	.0.08	(324)	(324)	(324)	(324)	739	739	739	739	739	739	739	739	4,618
33 Depreciation			696	696	696	696	12	12	12	12	12	12	12	12	2,874
34 Amortization			66	66	66	66	6	6	6	6	6	6	6	6	312
35 Administrative Expenses			127	127	127	127	231	231	231	231	231	231	231	231	2,357
36 UTILITIES			99	99	99	99									
37 Other operating Expenses (Income)			(68)	(68)	(68)	(68)	173	173	173	173	173	173	173	173	1,112
38															
39 Operating Expense			2,739	2,739	2,739	2,739	3,933	3,933	3,933	3,933	3,933	3,933	3,933	3,933	42,416
40 Operating Expense %			16.9%	16.9%	16.9%	16.9%	42.6%	42.6%	42.6%	42.6%	42.6%	42.6%	42.6%	42.6%	30.6%

There is another key thing to point out in this report: the consequent effect that the entry of these driver-based numbers have had on *Operating Expense* and *Operating Expense* %, which are shown above in Rows 39 and 40 (circled in blue). Contrast these figures with those from the previous image and you will understand how being able to create "what if" scenarios so quickly, with new figures, will significantly impact the forecast—and the ability to plan and react to changing market conditions.

- We will forecast Utilities costs next (Row 36), using a different method, Set, which will "write back" the figure you enter in the Amount column:
 Type Set in the Method column, and 109 in the Amount column.
- 5. Then press F9.

Now note that 109 appears in the forecast months; as well, on Operating Expenses and Operating Expenses % (as well as all consequent figures in the model) are recalculated on that basis, as shown in the following image.

32 Sales and Marketing	Revenue	0.08	(324)	(324)	(324)	(324)	739	739	739	739
33 Depreciation			696	696	696	696	12	12	12	12
34 Amortization			66	66	66	66	6	6	6	6
35 Administrative Expenses			127	127	127	127	231	231	231	231
36 UTILITIES	Set	109.00	99	99	99	99	109	109	109	109
37 Other operating Expenses (Income)			(68)	(68)	(68)	(68)	173	173	173	173
38										
39 Operating Expense			2,739	2,739	2,739	2,739	4,042	4,042	4,042	4,042
40 Operating Expense %			16.9%	16.9%	16.9%	16.9%	43.7%	43.7%	43.7%	43.7%

Lastly, we want to demonstrate another PowerExcel feature available with the driver-based planning we have shown so far: *users can enter numbers that override the driver Method*, which points up the limitless flexibility of using PowerExcel as a budget and forecasting—indeed, any kind of planning—solution.

6. To demonstrate that a user can enter an individual number(s), let's entertain the hypothesis that in *June* The Great Financials Company will initiate a Sales and Marketing campaign that will be far larger than the percentage of Revenue provided

Power**Excel**

previously: therefore, type **7777** in **June** for **Sales and Marketing**. As well—and perhaps more far-fetched than hypothetical—the company expects a huge increase in UTILITIES in the summer months: type **999** in **June** for **UTILITIES**.

7. Press F9.

New figures, based on those numbers entered in the specific cells, "override" those determined by the **Revenue** (percentage) and **Set** amounts previously demonstrated. All dependent numbers throughout the model (*Operating Expense*, *Operating Expense* %, etc.) also recalculate, as shown below, yellow-highlighted.

A	В	с	D	E	F	G	Н	I I
1 abas	PandA_2021_Cor	nnect			i			
2	Financial Data							
3	Filter	Version	Members	Forecast				
4	Filter	Entity	Members	Entity A				
5	Filter	Department	Members	Administration				
6 The Great Financials	Column1	Year	Range	\$B\$11:\$AG\$11				
7 Company	Column2	Month	Range	\$B\$12:\$AG\$12				
8 'Where everyone gets to go home on time'	Row	Account	Subsets	Members(Vei				
9								
10 OLAPivotTable								
11	2021	2021	2021	2021	2021	2021	2021	2021
12	Method	Amount	Jan	Feb	Mar	Apr	May	Jun
13 Version			Actual	Actual	Actual	Actual	Forecast	Forecast
14								
15 Sales of Goods			15,194	15,194	15,194	15,194	9,240	9,240
16 Sales of Services			995	995	995	995		
17								
18 Revenue			16,189	16,189	16,189	16,189	9,240	9,240
19								
20 Cost of Goods			6,474	6,474	6,474	6,474	3,234	3,234
21 Cost of Services			80	80	80	80	2,079	2,079
22								
23 Cost of Sales			6,554	6,554	6,554	6,554	5,313	5,313
24								
25 Gross Profit			9,635	9,635	9,635	9,635	3,927	3,927
26 Gross Profit %			59.5%	59.5%	59.5%	59.5%	42.5%	42.5%
27								
28 Payroll and related expenses			1,134	1,134	1,134	1,134	1,155	1,155
29 Distribution			342	342	342	342	924	924
30 Occupancy Expenses			642	642	642	642	231	231
31 Research and Development			123	123	123	123	462	462
32 Sales and Marketing	Revenue	0.08	(324)	(324)	(324)	(324)	739	7,777
33 Depreciation			696	696	696	696	12	12
34 Amortization			66	66	66	66	6	6
35 Administrative Expenses			127	127	127	127	231	231
36 UTILITIES	Set	: 109.00					109	999
37 Other operating Expenses (Income)			(68)	(68)	(68)	(68)	173	173
38								
39 Operating Expense			2,739	2,739	2,739	2,739	4,042	11,970
40 Operating Expense %			16.9%	16.9%	16.9%	16.9%	43.7%	129.5%

5. Using Range References and Other Functions in a PowerExcel Slice

PowerExcel features very powerful capabilities through the functions it adds to Excel, from the OLAConnection function, which enables the Slice to reach a Cloud-based multi-user model, to the many others that govern what shows in a Slice. There are numerous additional other functions that can obtain data/model logic from, and "write"/edit to, the Cloud-based model (where the analytic database resides).

Note that a full list of the 20+ PowerExcel Add-in Functions, and a detailed description of each, along with examples, can be found in the online <u>PowerExcel Functions manual</u>, as well as in the <u>Olation® Help file</u>.

This section will demonstration use of the OLATableRange function: the first step will be to set up a second PowerExcel Slice into the same workbook where an initial Slice exists; and then, use the OLATableRange function to display different Members from the first, as a means of making an "eyeball comparison" between, for example, different Entities or Departments.

5.1 Setting up Two Slices in a Single Worksheet

Until now we have worked with only 1 Slice in a worksheet; now we will add a second.

First arrange an example Slice using the Perspective Slice Type—the one on the image below shows Filters for *Actual*, 2021, *Entity A*, *Sales*, with the *Q1*, *Q2*, *Q3*, *Q4* for *Month* in Columns, and select Members from the *Account* dimension. (These Members comprise a Subset that was demonstrated earlier, i.e., DESCENDENTS;EBIT). The image shows the selected Members in yellow highlight.

	А	В	с	D	E	F
3	Dimensions:	Filter	Version	Members	Actual	
4		Filter	Year	Members	2021	
5		Filter	Entity	Members	Entity A	
6		Filter	Departme	Members	Sales	
7		Column	Month	Range	\$B\$11:\$E\$	11
8		Row	Account	Range	\$A\$12;\$A\$	33
9						
10	OLAPivotTable					
11		Q1	Q2	Q3	Q4	
12	Other Income (Expense)	255	255	255	255	
13	Other Revenue	360	360	360	360	
14	Other (Expense)	-105	-105	-105	-105	
15	Operating Profit	17067.3	17067.3	17067.3	17067.3	
	Operating Expense	9947.7	9947.7	9947.7	9947.7	
	Payroll and related expenses	3180	3180	3180	3180	
18	Distribution	960	960	960	960	
19	Occupancy Expenses	1800	1800	1800	1800	
20	Research and Development	345		345	345	
21	Sales and Marketing	1361.7	1361.7	1361.7	1361.7	
22	Depreciation	1950	1950	1950	1950	
23	Amortization	186	186	186	186	
	Administrative Expenses	357	357	357	357	
	UTILITIES	0	0	0	0	
26	Other operating Expenses (Incom	-192	-192	-192	-192	
27	Gross Profit	27015	27015	27015	27015	
28	Revenue	45390	45390	45390	45390	
	Sales of Goods	42600	42600	42600	42600	
	Sales of Services	2790		2790	2790	
	Cost of Sales	18375	18375	18375	18375	
	Cost of Goods	18150	18150	18150	18150	
33	Cost of Services	225	225	225	225	
34						



The operative functions/Cells and their respective Cells is as follows their use, and

OLAConnection	B1	Establishes connection to Olation analytical database
OLACube	B2	Allows selection of Cube in the database.
OLATableMember	B3 – B6	Allows selection (Filter) of Member in a Dimension
OLATableRange	B7, B8	Allows a range of Members in a Dimension to be shown
OLAPivotTable	A10	The function used to create the Slice (this is the operative function for the Perspective Slice Type).

Returning the task of creating a second PowerExcel Slice (or "Slice area") in the same worksheet: you can simply do the following:

- 1. Click on the **PowerExcel Tab**—or, if the PowerExcel sidebar is open, then:
- 2. Click **New** on the PowerExcel ribbon (if the PowerExcel sidebar was open, note that the button at bottom right says Insert).
- 3. Indicate in the **Location** (Step 1) text box the Cell where you want to position the insert of the Slice (e.g., Cell \$J\$1, as in the following image).

F	File Home Insert Page La	iyout For	mulas Da	ata Revie	w View	Help	PowerExc	el				모 Comments 🖻 Share
	O D R R R	ons Find	Refresh		ill Update	New	,	elete Show	Connec	tions Optio	ns Clear	New Language Change Change Software About
	Sidebar	OLA Fx			ugh Cubes			cord Sidebar			Cache	Cube Password License Updates PowerExcel
	PowerExcel Slice			PowerExcel D	ata		SqI SS L	ive	Pow	erExcel Con	nection	Cube Help Y
J	$\sim : \times \checkmark f_x$											~
-	A	B	C	D	E	F	G	Н	1	J	К	PowerExcel • •
	Dimensions:	Filter		Members								
4		Filter		Members								Database Cube
5		Filter		Members								PandA_2022_Connect V Financial Data V
7		Filter Column	Month	Members								T Filters
8		Row		-	\$B\$11:\$E\$: \$A\$12:\$A\$							🖄 Version: Actual
9		NUW	Account	Nalige	9A912.9A9	20						L. Year: 2021
	OLAPivotTable											L'Entity: Entity A L'Department: Sales
11	ODM INOCIADIE	01	02	Q3	04							Department: Sales
	Other Income (Expense)	255										
	Other Revenue	360										💀 Columns
	Other (Expense)	-105										L. Month: Q1,Q2,Q3,Q4
	Operating Profit	17067.3										
	Operating Expense	9947.7			9947.7							
	Payroll and related expenses	3180			3180							
	Distribution	960			960							🔀 Rows
19	Occupancy Expenses	1800	1800	1800	1800							Account: Other Income (Expense), Other Revenue, Other (Expe
20	Research and Development	345	345	345	345							
21	Sales and Marketing	1361.7	1361.7	1361.7	1361.7							
22	Depreciation	1950	1950	1950	1950							>
23	Amortization	186	186	186	186							Step 1 - Location Step 2 - Slice Type
24	Administrative Expenses	357	357	357	357							Current Sheet: \$J\$3 🖉 Perspective
25	UTILITIES	0	0	0	0							O New Worksheet O DB Functions
26	Other operating Expenses (Inco	<mark>n</mark> -192	-192	-192	-192							New Workbook O Power Analyzer
27	Gross Profit	27015	27015	27015	27015							
28	Revenue	45390	45390	45390	45390							Step 3 - Additional Options
29	Sales of Goods	42600	42600	42600	42600							Hide Empty Rows Allow Excel Functions
	Sales of Services	2790	2790	2790	2790							Delete Removed Rows Format Cells by Type
	Cost of Sales	18375		18375	18375							Dynamic Row Labels
	Cost of Goods	18150	18150	18150	18150							
	Cost of Services	225	225	225	225							Step 4 - 🔲 Insert
34		I	I									
	← → Sheet1 ↔											
Rea	ady Calculate 📧 🏷 Accessibili	ty: Good to g	0									III III + 100%

- 4. For present purposes, keep all other defaults—i.e., if recreating the Slice shown previously, maintain the same Filters, Column and Row Members, and use the **Perspective Slice Type** to create the Slice.
- 5. Click **Insert**. The second Slice in the worksheet, essentially a replication of the first, will appear as follows:

1	А	В	С	D	E	F	G	н	1	J	К	L	м	N
1	Database:	PandA_20)22_Conne	ct						Database:	PandA_2022_	Connect		
2	Cube:	Financial	Data							Cube:	Financial Dat	a		
3	Dimensions:	Filter	Version	Members	Actual					Dimensions:	Filter	Version	Members	Actual
4		Filter	Year	Members	2021						Filter	Year	Members	2021
5		Filter	Entity	Members	Entity A						Filter	Entity	Members	Entity A
6		Filter	Departme	Members	Sales						Filter	Department	Members	Sales
7		Column	Month	Range	\$B\$11:\$E\$	311					Column	Month	Range	\$K\$11:\$N\$1
8		Row	Account	Range	\$A\$12:\$A	\$33					Row	Account	Range	\$A\$12:\$A\$3
9														
10	OLAPivotTable								$\boldsymbol{<}$	OLAPivotTable				
11		Q1	Q2	Q3	Q4						Q1	Q2	Q3	Q4
12	Other Income (Expense)	255	255	255	255					Other Income (Expense	255.00	255.00	255.00	255.00
13	Other Revenue	360	360	360	360					Other Revenue	360.00	360.00	360.00	360.00
14	Other (Expense)	-105	-105	-105	-105					Other (Expense)	(105.00)	(105.00)	(105.00)	(105.00
15	Operating Profit	17067.3	17067.3	17067.3	17067.3					Operating Profit	17,067.30	17,067.30	17,067.30	17,067.30
16	Operating Expense	9947.7	9947.7	9947.7	9947.7					Operating Expense	9,947.70	9,947.70	9,947.70	9,947.70
17	Payroll and related expenses	3180	3180	3180	3180					Payroll and related expe	3180	3180	3180	318
18	Distribution	960	960	960	960					Distribution	960	960	960	96
19	Occupancy Expenses	1800	1800	1800	1800					Occupancy Expenses	1800	1800	1800	180
20	Research and Development	345	345	345	345					Research and Developm	345	345	345	34
21	Sales and Marketing	1361.7	1361.7	1361.7	1361.7					Sales and Marketing	1361.7	1361.7	1361.7	1361.
22	Depreciation	1950	1950	1950	1950					Depreciation	1950	1950	1950	195
23	Amortization	186	186	186	186					Amortization	186	186	186	18
24	Administrative Expenses	357	357	357	357					Administrative Expense	357	357	357	35
25	UTILITIES	0	0	0	0					UTILITIES	0	0	0	
26	Other operating Expenses (Incor	r -192	-192	-192	-192					Other operating Expens	-192	-192	-192	-19
27	Gross Profit	27015	27015	27015	27015					Gross Profit	27015	27015	27015	2701
28	Revenue	45390	45390	45390	45390					Revenue	45390	45390	45390	4539
29	Sales of Goods	42600	42600	42600	42600					Sales of Goods	42600	42600	42600	4260
30	Sales of Services	2790	2790	2790	2790					Sales of Services	2790	2790	2790	279
31	Cost of Sales	18375	18375	18375	18375					Cost of Sales	18375	18375	18375	1837
32	Cost of Goods	18150	18150	18150	18150					Cost of Goods	18150	18150	18150	1815
33	Cost of Services	225	225	225	225					Cost of Services	225	225	225	22

Now, in order to change the Filters on either of those 2 PowerExcel Slices, one could simply click on the OLAPivotTable cell (A10 for the first Slice, J10 for the second—both circled in the preceding image. The PowerExcel sidebar will appear, and it would simply be a matter of changing selections in either Columns or Rows. The next image shows that very thing: with selected Metrics *Account* members (circled) showing in the Rows of the second Slice.

Power**Excel**

A	В	с	D	E	F	G	н	1	J	К	L	м	N
1 Database:	PandA_2	022_Conne	ct						Database:	PandA_20	22_Conne	ct	
2 Cube:	Financial	Data							Cube:	Financial	Data		
3 Dimensions:	Filter	Version	Members	Actual					Dimensions:	Filter	Version	Members	Actual
4	Filter	Year	Members	2021						Filter	Year	Members	2021
5	Filter	Entity	Members	Entity A						Filter	Entity	Members	Entity A
6	Filter	Departme	Members	Sales						Filter	Departme	Members	Sales
7	Column	Month	Range	\$B\$11:\$E\$1	1					Column	Month	Range	\$K\$11:\$N\$
8	Row	Account	Range	\$A\$12:\$A\$3	3					Row	Account	Range	\$J\$12:\$J\$1
9													
10 OLAPivotTable									OLAPivotTable				
11	Q1	Q2	Q3	Q4						Q1	Q2	Q3	Q4
12 Other Income (Expense)	255	255	255						Gross Profit %	60%			
13 Other Revenue	360								Operating Expense %	22%			22%
14 Other (Expense)	-105	-105	-105	-105					Operating Profit %	38%	38%	38%	38%
15 Operating Profit	17067.3	17067.3	17067.3	17067.3					FTE	0%	0%	0%	0%
16 Operating Expense	9947.7	9947.7	9947.7	9947.7					Revenue per FTE	0%	0%	0%	0%
17 Payroll and related expense:	3180	3180	3180										
18 Distribution	960	960	960	960									
19 Occupancy Expenses	1800	1800	1800	1800									
20 Research and Development	345	345	345	345									
21 Sales and Marketing	1361.7	1361.7	1361.7	1361.7									
22 Depreciation	1950	1950	1950	1950									
23 Amortization	186	186	186	186									
24 Administrative Expenses	357	357	357	357									
25 UTILITIES	0	0	0	0									
26 Other operating Expenses (Ir	icorr -192	-192	-192	-192									
27 Gross Profit	27015	27015	27015	27015									
28 Revenue	45390	45390	45390	45390									
29 Sales of Goods	42600	42600	42600	42600									
30 Sales of Services	2790	2790	2790	2790									
81 Cost of Sales	18375	18375	18375	18375									
32 Cost of Goods	18150	18150	18150	18150									
33 Cost of Services	225	225	225	225									

5.2 **Changing the Range Reference in a PowerExcel Slice**

This section will discuss how to correctly change a Range Function reference within a PowerExcel Slice.

IMPORTANT: The following step-by-step procedure must be observed and followed when changing Range References or when changing the range parameter of the OLATableRange formula to ensure that the newly specified range will be committed to the formula.

A 'Range' or a 'Range Reference' concerns a group of cells rather than just one cell. For this topic, we will show how to modify/update the **OLATableRange** function, which enables a user to specify a range of Members to be displayed along Rows or Columns.

Note below the OLATableRange function that governs what appears in Rows. (This is from the first PowerExcel Slice, created previously.)

BB		f∗ {=OL∆	TableRang	e(\$B\$1,\$B\$	\$2,"Row",0	,"Acc	ount'	OLA_	Acco	ount_e1a1bd810bdc43b7	'9a79dd6e116b	58b2_Memb	pers)}		
	А	В	С	D	E	F	G	н	Т	l	к	L			
1	Database:	PandA_20	22_Conne	zt						Database:	PandA_2022	Connect			
2	Cube:	Financial	Data							Cube:	Financial Dat	a			
З	Dimensions:	Filter	Version	Members	Actual					Dimensions:	Filter	Version	Me		
4		Filter	Year	Members	2021						Filter	Year	Me		
5		Filter	Entity	Members	Entity A					Eiltor Entity					
6		Filter	Departme	Members	Sales					The Formula function OLATableRange ent M is the same across Cells B8 to E8 and					
7		Column	Month	Range	\$B\$11:\$E\$	11									
8		Row	Account	Range	\$A\$12;\$A	33									
9	`									governs the Members shown in Rows.					
10	OLAPivotTable									ULAPIVOTIAble					
11		Q1	Q2	Q3	Q4						Q1	Q2	Q3		
	Other Income (Expense)	255	255	255	255					Gross Profit %	60%	60%	%		
13	Other Revenue	360	360	360	360					Operating Expense %	22%	229	%		
14	Other (Expense)	-105	-105	-105	-105					Operating Profit %	38%	389	%		
15	Operating Profit	17067.3	17067.3	17067.3	17067.3					FTE	0%	09	%		
16	Operating Expense	9947.7	9947.7	9947.7	9947.7					Revenue per FTE	0%	09	%		
17	Payroll and related expenses	3180	3180	3180	3180										
18	Distribution	960	960	960	960										
19	Occupancy Expenses	1800	1800	1800	1800										
	and the second se	0.45	345	345	345										
	Research and Development	345	345	345	343										

As above, the circled function governs which Members are shown in Rows—in this spreadsheet, Row 12 through Row 33—and you will see the same formula in each of the 4 cells (B8 to E8).

The correct way to modify the range reference is to <u>simultaneously update the range within the</u> <u>group of cells referenced in the Range Function</u>.

IMPORTANT: To correctly update the range, one must: (1) select the group of cells governed by the Range function and update them *simultaneously*; keeping in mind that (2) the Members covered within the new range must be valid Members (i.e., they exist within the source database).

Now suppose we wish to change the range reference of the *second* PivotTable so that it once again shows the same Members along Rows that are displayed in the first PivotTable, the method will be to do as follows:

- Go to the PivotTable that you wish to update and locate the OLATableRange Function for Row; highlight the group of cells referenced by that function. (As this is the second inserted Slice, those Cells will be K8 through N8—see the image below, red circled).
- 2. Go to the formula bar; **double-click on the last function argument** (blue circled in the below image). Notice that the related Rows are now highlighted in Excel (*Gross Profit %* through *Revenue per FTE*, i.e., **Row 12** through **Row 16**).

A	В	C	D	E	F	G	н	1 I I	J	K	L	M	N
1 Database:	PandA_2	022_Conne	ect						Database:	PandA_2	22_Conne	ct	
2 Cube:	Financial	Data							Cube:	Financial	Data		
Dimensions:	Filter	Version	Members	Actual					Dimensions:	Filter	Version	Members	Actual
	Filter	Year	Members	2021						Filter	Year	Members	2021
5	Filter	Entity	Members	Entity A						Filter	Entity	Members	Entity A
i	Filter	Departm	e Members	Sales						Filter	Departme	Members	Sales
	Column	Month	Range	\$B\$11:\$E\$1	1					Column	Month	Range	SK\$11:SNS
	Row	Account	Range	\$A\$12:\$A\$	33					s)	Account	Range	\$J\$12:\$J\$1
L													
0 OLAPivotTable									OLAPivotTable				
1	Q1	Q2	Q3	Q4						Q1	Q2	Q3	Q4
2 Other Income (Expense)	25	5 255	5 255	255					Gross Profit %	60%	60%	60%	60%
8 Other Revenue	36	360	360	360					Operating Expense %	22%	22%	22%	22%
Other (Expense)	-10	5 -105	-105	-105					Operating Profit %	38%			
5 Operating Profit	17067.3	3 17067.3	3 17067.3	17067.3					FTE	0%			
6 Operating Expense	9947.1	7 9947.1	7 9947.7	9947.7					Revenue per FTE	0%	0%	0%	0%
7 Payroll and related expe	nses 318	3180	3180	3180									

Power**Excel**

3. Select the new range that you want to show in Rows. In this case, put your cursor on **A12 and highlight cells to A33**, which will be the new target range (boxed in the image below). Note that the function argument changes to this range of cells (arrow).

	А	В	с	D	E	F	G	н	- I -	J	K	L	M	N
1 Databas	se:	PandA_20)22_Conne	ct						Database:	PandA_20	22_Conne	ct	
2 Cube:		Financial	Data							Cube:	Financial	Data		
3 Dimensi	ions:	Filter	Version	Members	Actual					Dimensions:	Filter	Version	Members	Actual
4		Filter	Year	Members	2021						Filter	Year	Members	2021
5		Filter	Entity	Members	Entity A						Filter	Entity	Members	Entity A
6		Filter	Departme	e Members	Sales						Filter	Departme	e Members	Sales
7		Column	Month	Range	\$B\$11:\$E\$1	.1					Column	Month	Range	\$K\$11:\$N
8		Row	Account	Range	\$A\$12:\$A\$	33					A33)	Account	Range	\$J\$12:\$J\$
9														
10 OLAPivo	otTable									OLAPivotTable				
11		Q1	Q2	Q3	Q4						Q1	Q2	Q3	Q4
	ncome (Expense)	255								Gross Profit %	60%			
1 Other R		360	360	360						Operating Expense %	22%			
1 Other (E		-105	-105	-105	-105					Operating Profit %	38%			
1 Operati		17067.0	17067.0	17067.0	17067.0					FTE	0%			
	ng Expense	9947.7								Revenue per FTE	0%	0%	0%	0%
	and related expenses	3180												
1 Distribu		960												
	ncy Expenses	1800												
	h and Development	345												
	nd Marketing	1361.7												
2 Depreci		1950												
2 Amortiz		186												
	strative Expenses	357												
2 UTILITIE		0		-	-									
	perating Expenses (Incor													
2 Gross Pr		27015												
2 Revenu		45390												
2 Sales of		42600												
3) Sales of		2790												
3 Cost of 1		18375												
3 Cost of		18150												
3 Cost of S	Services	225	225	225	225									

4. To commit the change, press **Ctrl + Shift + Enter** keys.

IMPORTANT: Bear in mind that when changing range references, in order to successfully commit the changes to the formula, <u>you MUST always press the **Ctrl + Shift + Enter** keys</u>. Otherwise, the new range will not be updated.

5. Press the **F9** key to refresh the PowerExcel Slice. Notice that the range reference for the rows of the second PivotTable has updated and now displays the same *Account* members as in the first PivotTable.

A .	В	С	D	E	F	G	н	1	J	К	L	M	N
1 Database:	PandA_20)22_Conne	ct						Database:	PandA_2022	Connect		
2 Cube:	Financial	Data							Cube:	Financial Dat	a		
3 Dimensions:	Filter	Version	Members	Actual					Dimensions:	Filter	Version	Members	Actual
4	Filter	Year	Members	2021						Filter	Year	Members	2021
5	Filter	Entity	Members	Entity A						Filter	Entity	Members	Entity A
6	Filter	Departme	eMembers	Sales						Filter	Department	Members	Sales
7	Column	Month	Range	\$B\$11:\$E\$	11					Column	Month	Range	\$K\$11:\$N\$11
8	Row	Account	Range	\$A\$12:\$A\$	33					Row	Account	Range	\$A\$12:\$A\$33
9													
10 OLAPivotTable									OLAPivotTable				
11	Q1	Q2	Q3	Q4						Q1	Q2	Q3	Q4
12 Other Income (Expense)	255	255	255	255					Other Income (Expense)	255.00	255.00	255.00	255.00
13 Other Revenue	360	360	360	360					Other Revenue	360.00	360.00	360.00	360.00
14 Other (Expense)	-105	-105	-105	-105					Other (Expense)	(105.00)	(105.00)	(105.00)	(105.00)
15 Operating Profit	17067.3	17067.3	17067.3	17067.3					Operating Profit	17,067.30	17,067.30	17,067.30	17,067.30
16 Operating Expense	9947.7	9947.7	9947.7	9947.7					Operating Expense	9,947.70	9,947.70	9,947.70	9,947.70
17 Payroll and related expenses	3180	3180	3180	3180					Payroll and related expe	3180	3180	3180	3180
18 Distribution	960	960	960	960					Distribution	960	960	960	960
19 Occupancy Expenses	1800	1800	1800	1800					Occupancy Expenses	1800	1800	1800	1800
20 Research and Development	345	345	345	345					Research and Developm	345	345	345	345
21 Sales and Marketing	1361.7	1361.7	1361.7	1361.7					Sales and Marketing	1361.7	1361.7	1361.7	1361.7
22 Depreciation	1950	1950	1950	1950					Depreciation	1950	1950	1950	1950
23 Amortization	186	186	186	186					Amortization	186	186	186	186
24 Administrative Expenses	357	357	357	357					Administrative Expense	357	357	357	357
25 UTILITIES	0	0	0	0					UTILITIES	0	0	0	0
26 Other operating Expenses (Inco	<mark>n -192</mark>	-192	-192	-192					Other operating Expens	-192	-192	-192	-192
27 Gross Profit	27015	27015	27015	27015					Gross Profit	27015	27015	27015	27015
28 Revenue	45390	45390	45390	45390					Revenue	45390	45390	45390	45390
29 Sales of Goods	42600	42600	42600	42600					Sales of Goods	42600	42600	42600	42600
30 Sales of Services	2790	2790	2790	2790					Sales of Services	2790	2790	2790	2790
31 Cost of Sales	18375	18375	18375	18375					Cost of Sales	18375	18375	18375	18375
32 Cost of Goods	18150	18150	18150	18150					Cost of Goods	18150	18150	18150	18150
33 Cost of Services	225	225	225	225					Cost of Services	225	225	225	225

6. PowerExcel Licensed Capabilities: New Cube / Drill-Through / SQL SS Live / DRDC (Dynamic Relational Database Connectivity)

By now we have documented the full complement of capabilities that PowerExcel has, to reach, from Excel, data in a collaborative business model—in order to report on or analyze any model data and to contribute to planning applications. The following capabilities—all of which require licensing—are of a different order. The first, New Cube, makes use of data in Excel to create a model "from scratch." In other words, PowerExcel can transform formatted Excel data, no matter the volume of it (we should note here how large some Excel data sets can be) into a significantly more efficient, sharable "cube" structure(s) for collaborative business applications.

The other capabilities go in the other direction—they concern reaching data in transactional (i.e., table-based) systems and applications. With PowerExcel, a user can "drill through" to the transactional details of any table that contributes to a business model; can bring up summary table-based data and make pretty well limitless "multidimensional" reports from it; can "write back" data points into transactional tables, and; save Views that will be dynamic to other third-party products, including end-user tools like Power BI.

The following sections detail these capabilities and point out the PowerExcel benefits from using them.

6.1 New Cube

PowerExcel users can create Cubes in Olation® from selected data in an Excel spreadsheet. This feature determines the Dimension and Cube structures by looking at the selected data range. Dimensions, dimension types and measure values are determined by looking at the data in each of the selected columns. Once the Dimensions and Cubes are created in Olation, modifications can be made through the Olation or Nexus Studio. [Note that this presupposes that a user/company has an accessible installation of the Olation or Nexus Studio.]

Note: The PowerExcel **New Cube** capability is enabled on the basis of customer licensing. If your PowerExcel installation does not include New Cube capabilities, reach <u>PARIS Technologies</u> for further information.

Creating a new Cube begins with a worksheet of tabular data in Excel. This data can come from any source but needs to follow a basic structure, beginning with the fact that has a Header row (as circled in the following image, from an example file, *Northwind Sample Data.xlsx*). This row is used to name the specific Dimensions and Measures for the new Cube.

	А	В	С	D	E	F	G	_ н
1	CompanyName	ProductName	Employee	OrderDate	UnitPrice	Quantity	Discount	
2	Vins et alcools Chevalier	Queso Cabrales	Steven Buchanan	7/4/1996	14	12	0	
3	Vins et alcools Chevalier	Singaporean Hokkien Fried Mee	Steven Buchanan	7/4/1996	9.8	10	0	
4	Vins et alcools Chevalier	Mozzarella di Giovanni	Steven Buchanan	7/4/1996	34.8	5	0	
5	Toms Spezialitäten	Tofu	Michael Suyama	7/5/1996	18.6	9	0	
6	Toms Spezialitäten	Manjimup Dried Apples	Michael Suyama	7/5/1996	42.4	40	0	
7	Hanari Carnes	Jack's New England Clam Chowder	Margaret Peacock	7/8/1996	7.7	10	0	
3	Hanari Carnes	Manjimup Dried Apples	Margaret Peacock	7/8/1996	42.4	35	0.15	
9	Hanari Carnes	Louisiana Fiery Hot Pepper Sauce	Margaret Peacock	7/8/1996	16.8	15	0.15	
0	Victuailles en stock	Gustaf's Knäckebröd	Janet Leverling	7/8/1996	16.8	6	0.05	
1	Victuailles en stock	Ravioli Angelo	Janet Leverling	7/8/1996	15.6	15	0.05	
2	Victuailles en stock	Louisiana Fiery Hot Pepper Sauce	Janet Leverling	7/8/1996	16.8	20	0	
3	Suprêmes délices	Margaret Peacock	7/9/1996	64.8	40	0.05		
4	Suprêmes délices	Geitost	Margaret Peacock	7/9/1996	2	25	0.05	
15	Sunrâmes délices	Comembert Dierrot	Margaret Deacock	7/9/1996	27.2	40	0	

1. To define the new Cube, first select the columns (and rows) that contain the data. You can select full columns and the logic will stop once it hits a blank row. 2. Next, select the New Cube option in the PowerExcel Tab.



PowerExcel uses the header columns along with the first 4 rows of data to determine what to do with each column of data. If the column contains 4 text values, then the column is treated as a standard dimension. If the column contains 4 date values, the column is treated as a data dimension. If the column contains 4 numerical values, it is treated as a measure. The user will receive a preview dialog with the parsed Dimension and Cube values, as shown in the following image.

Create New Cube			×
Cube Definition Database: CreateCube Dimensions: Name 12 CompanyName 12 ProductName 12 Employee () OrderDate	frPowerExcel Members 89 77 9 7/4/1996 - 5/6/1998	Cube: Northwind Sample Data Cube Values: UnitPrice Quantity Discount	>
	OK	Cancel	.:

Before clicking OK, there are 2 conditions that must be met <u>in advance</u> for successful Cube creation:

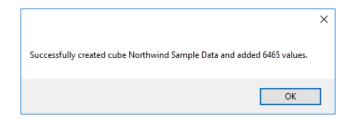
- An **Olation database** (whether a SQL, Nexus or other database type) must exist; this may be an existing or a newly created database.
- There must be an established **PowerExcel Connection** to this database.

In the above diagram the Database circled top left (a drop-down selection) is in fact the PowerExcel Connection name; a connection has already been established to a Nexus database also so-named (CreateCubefrPowerExcel).

The default Cube name is the name of the saved Excel document; you may name the new Cube—circled top right in the preceding image—anything you wish (in this example, *Northwind Sample Data Cube*). For each column that represents a Dimension, the dialog will display the column header as the dimension name, an icon indicating the type, and a count or date range indicating the number of unique Members for each Dimension. The columns that contain numeric values will appear as Values columns and will become Measure members in the Measure dimension.

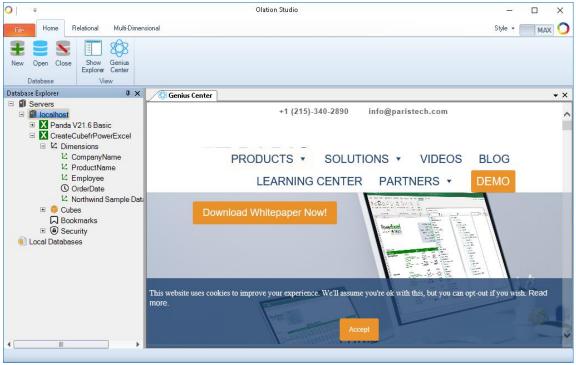
3. Click OK.

A message will appear indicating successful Cube creation and added Values.



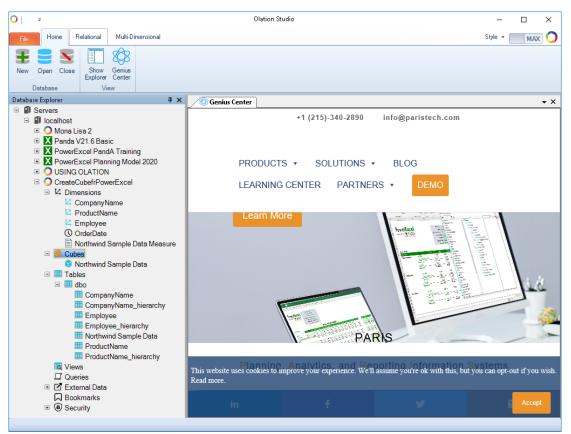
If you want to change the name of any of the Dimensions or Measures, cancel the previous dialog above, edit the column header and start the new Cube again. Clicking OK will pass this structure along with all the rows of data to Olation and create all the new Dimensions and the Cube and will populate the data. If the database is a Nexus database, then it will be saved multidimensionally. If the target database source is relational (e.g., SQL Server) then all data will be pushed to relational tables. Both instances are shown below.

Note that Cube and Dimension names must be unique. In SQL, Dimensions are created as custom dimension types so users can easily edit them using Olation Studio. If created as multidimensional dimensions in Nexus, they can be edited in Nexus Studio. Note that, depending on the amount of data, this process can take some time. A progress dialog will come up until all values are written to Olation.

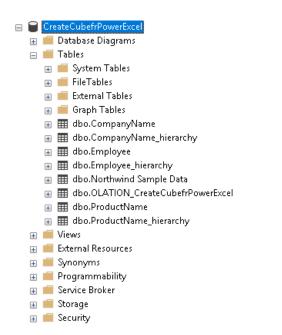


Cube created as a database in Nexus Studio

In the following images dialogs, note that the Dimensions and Tables are shown in Olation Studio. As this is a SQL-based Olation database, the Tables are also shown in SQL Server (second image).



Above, the Dimensions, the new Cube, and relational (SQL) tables shown in Olation Studio



At left, the tables created in the New Cube process shown in SQL Server

Power**Excel**

You can now create a PowerExcel Slice of the newly created Cube: the spreadsheet below shows the Connection used to reach the Cube and the Cube itself (boxed area in the image below). Filters and Columns and Rows selections have been made to show the following Slice.

New Open Save Show C Sidebar	Pptions Fin Options Fin	d Refresh	DRDC	Drill Up		lew Insert	Delete Sho Record Side	w Conne	ections Opt	ions Clear Cache	New Cube	Language		Change Software About License Updates PowerExcel	Comments 🛛 🖄 Sh
PowerExcel Slice			PowerE	cel Data		SqI S	iS Live	Po	werExcel Co	nnection	Cube			Help	
9 \checkmark : $\times \checkmark f_x$	=@OLAF	PivotTable(\$8	B\$1,\$B\$	2,\$B\$7:\$E\$7	\$B\$6:\$E\$	6,\$B\$3:\$E\$	3,\$B\$4:\$E\$4,	\$B\$5:\$E\$5,;	3B\$11,FAL	SE, FALSE, FA	LSE, FALSE	,TRUE)			
A	В	С	D	E	F	G	н	1	J	К	L	м	N A		
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lube:	Northwin	d Sample Da	ata											Database Ci	ube
)imensions:	Filter	EmployeeN	Member	s All											forthwind Sample Data
	Filter	OrderDateN	vlember	s Total Ord	erDate										
	Filter	Northwin(N	Member	s Quantity										Filters	
	Column	ProductN: R	Range	\$B\$10:\$C	\$10									C OrderDate:	All Total OrderDate
	Row	Companyl F	Range	\$A\$11:\$A	\$102									C OrderDate:	
DLAPivotTable															
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ins et alcools Chevalier	98		1					12	0	0	0	0	0		Name, Queso Cabrares, sin
oms Spezialitäten	253			0 0		0 0		14	0	0	15	0			
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hop-suev Chinese	465			0 28		0 0		0	0	0	0		0	CompanyName: All,Total Comp	anyname, vins et alcools
ichter Supermarkt	798			0 0		-		6	10	0	30	0	15		
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ue Delícia	394		1			0 15		12	20	0	0	0		O New Workbook	O Power Analyzer
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/hite Clover Markets	1063			0 0				0	0	0	0	0	95 🖕		
	F)			-					•						

6.2 Drill Through

PowerExcel has a Drill Through feature, which allows users to see the relational database reference values that create a point(s) in a multidimensional data model. The Drill Through feature can be applied to any data point, but it is particularly useful when used on an aggregated number, showing its "source" values.

Once Drill-Through values of composite relational records are shown in PowerExcel, a user can investigate further—essentially, "multidimensionally"—to show records across different Dimension/Member selections.

Using another feather, SQL SS Live, a user can as well Insert or Delete records from a relational database source, provide s/he has requisite privileges.

NOTE: The PowerExcel **Dill Through** capability is enabled on the basis of customer licensing. If your PowerExcel installation does not include this capability, reach <u>PARIS Technologies</u> for further information In addition to being a licensed feature, DRDC requires that the Olation Server be installed and licensed.

Also important: To perform a drill though, the PowerExcel must have rights to access the referenced underlying relational database.

This example uses an Olation® model/cube called *Sales* that is based on a SQL Server relational database called *USING_OLATION_ORIG*; the Olation model has the same name and is referenced in Cell B1 in the spreadsheet below, which is an example PowerExcel Slice.

Fil No	ew Open Save Show Sideba PowerExcel Sli	ar' (DLA Fx PowerE:	Formulas Data	w Insert I	Delete Shor Record Sideb	ar Conn	ections Opti werExcel Cor	ons Clear Cache	VerExcel New Cube Cube	Language	Change C Password L	Change Soft	ware Abou lates PowerE	ıt			
VI				-		-	_								_	-	- 1	- 1
	A	B	C	D	E	F	G	н		1	К	L	м	N	0	Р	Q	R
-	Database:	_	ATION_ORIG															
_	Cube: Dimensions:	Sales Filter	Sales Measure	Members	Amount													
3	Dimensions:	Filter	Version	Members	Actual													
5		Filter	Account	Members	Sales													
6		Column	Month	Range	\$8\$10:\$R\$	10												
7		Row	Region	Range	\$A\$11:\$A													
8			inegroni	inange.	propaging r													
9	OLAPivotTable																	
10		Total Qua	January	1st Quarter	February	March	April	2nd Quart	May	June	July	3rd Quarte	August	Septembe	October	4th Quarte	Novembe	December
11	Argentina	4194	1234	1844	340	270	700	1170	270	200	370	1180	380	430	0	0	0	0
12	World	32234	4234	11819	4575	3010	3110	8240	3030	2100	3315	9975	3280	3380	1000	2200	200	1000
13	South America	15394	2234	4844	1340	1270	1700	4170	1270	1200	1370	4180	1380	1430	1000	2200	200	1000
14	Brazil	11200	1000	3000	1000	1000	1000	3000	1000	1000	1000	3000	1000	1000	1000	2200	200	1000
15	Canada	7215	1000	3850	2000	850	450	1350	800	100	745	2015	650	620	0	0	0	0
16	North America	16840	2000	6975	3235	1740	1410	4070	1760	900	1945	5795	1900	1950	0	0	0	0
	Mexico	0	-	-			0	0	0			0	0	0	0	0	0	0
18	USA	9625	1000	3125	1235	890	960	2720	960	800	1200	3780	1250	1330	0	0	0	0
19																		
20																		

Our aim will be to do a drill through on the green-highlighted cell in the image above, Cell D13, whose value is **4844**. Note that it comes at the intersection of *South America*, 1st Quarter (the Row and Column Dimension Members) for *Amount*, *Actual*, *Sales* (the Filter Members), all of which are yellow-highlighted.

1. To perform the Drill Through, select a cell in a PowerExcel Slice—e.g., Cell D13, as above, then click on the Drill Through icon on the PowerExcel ribbon (boxed in the image above, and shown below).



The DrillThrough dialog appears, as shown in the image below.

Note that you can select, for Source, either Multidimensional or Relational. When Multidimensional is selected, the composite data points from the multidimensional model (only) will appear. When Relational is selected (as shown selected), the composite points that make up the selected cell will be the *relational database points*—in sum, "reaching back" to the table(s) for the most granular level transactions.

As well you can direct PowerExcel to show the drill through results in either a New Workbook or New Worksheet (as shown selected);

The Maximum Number of Rows can be indicated.

Lastly—and this will be important when discussing the next feature, SQL SS Live, there is a Read-Only box (circled in the image). When checked, the user will not be able to "write back" to the Source database. The box is unchecked in the image, which is necessary for an upcoming exercise, i.e., we will want to demonstrate the "write back" capability.

DrillThrough	×
Source O Multidimensional	Location New Workbook New Worksheet
Options Maximum Rows: 1000	Read-Only
OK	Cancel

2. Click OK.

The result of the drill through will appear in a New Worksheet:

	A	В	с	D	E	F	G	L
1	Database:	USING_OL	ATION_OF	IG				Τ
2	Cube:	Sales						
3	Dimensio	Sales Mea	Members	Not Sorte	Show			
4		Version	Members	Not Sorte	Show			
5		Region	Members	Not Sorte	Show			
6		Month	Members	Not Sorte	Show			
7		Account	Members	Not Sorte	Show			
8								
9	OLAForm	Table						
10								
11	ID	Version	Region	Month	Account	Amount		
12	68	Actual	Argentina	January	Sales	1234		
13	69	Actual	Argentina	February	Sales	340		
14	70	Actual	Argentina	March	Sales	270		
15	116	Actual	Brazil	January	Sales	1000		
16	117	Actual	Brazil	February	Sales	1000		
17	118	Actual	Brazil	March	Sales	1000		
18								
19								

In summary, these six transactional records from the USING_OLATION_ORIG relational database in the SQL Server—concerning Actual Sales in South America—comprise the (multidimensional data point) value shown in Cell D13.

Although it is not necessary, you can confirm the value (4844) by creating a SUM on the drill-through sheet:

F1	0	- : F	x v	fx =SI	JM(F12:F1	7)	
	.0		~ ~	JA	MM(1 12.1 1	<u>0</u>	
	А	В	С	D	E	F	G
1	Database:	USING_O	ATION_OF	lG			
2	Cube:	Sales					
3	Dimensic	Sales Mea	Members	Not Sorte	Show		
4		Version	Members	Not Sorte	Show		
5		Region	Members	Not Sorte	Show		
б		Month	Members	Not Sorte	Show		
7		Account	Members	Not Sorte	Show		
8							
9	OLAForm1	Table					
10							
11	ID	Version	Region	Month	Account	Amount	
12	68	Actual	Argentina	January	Sales	1234	
13	69	Actual	Argentina	February	Sales	340	
14	70	Actual	Argentina	March	Sales	270	
15	116	Actual	Brazil	January	Sales	1000	
16	117	Actual	Brazil	February	Sales	1000	
17	118	Actual	Brazil	March	Sales	1000	
18						4844	
19							

Two things are worth noting at this point:

- 1. The spreadsheet of this drill through can be saved locally (or, if the original Slice still exists, it can be saved to the Cloud for other users to open).
- 2. The quick access to transactional records via the PowerExcel Drill Through stands in contrast to what might otherwise be requred by other programs to reach this data. As an example, it would likely require advanced query-writing skills to create the SQL Query to run through all tables (as it is highly unlikely that this data would be available in one table) and return the values. A sample query, quite complex, is shown below as an example (red boxed)—indeed, it s the SQL query that would need to be written to return the values obtained in the exercise above.

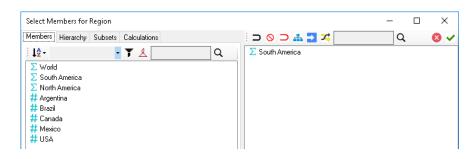
e Edit View Query Project Debug Tools Window			
🗢 - 💿 🔁 - 🛅 - 🛀 🔛 🚰 🚇 New Query 🖉 🚇 🎧 🛔	1 🕼 - ୭ - ୯ - 🕅	- 🚽 🚽 🖓 - 🖓	- 🍠 📜 🕨 🗉 🔿 🕇 🖓 🖞
W W USING OLATION_ORIG - DEbug =	1 22 E P 22 P S B B B D 3 3 4 5		
ect Explorer	+ # × SOLQuerv5.sql - ERSEANO\Demo (5		
nnect= 🖞 🎀 🗏 🝸 🖒 🚸		<pre>factdata.ID, dbo.dim_Regions.Continent, dbo.dim onth, dbo.Factdata.dim Accounts AS 'Account',</pre>	m_Regions.Region, dbo.dim_Months.Quarter,
🗉 冒 Panda_Base_Clean_v2	A 2	dbo.Factdata.dim_Actua_VS_Budget_AS_'Ver	rsion", dbo.Factdata.Amount
🗉 🗑 Panda_Dynamics365_Demo	3 FROM db	.Factdata LEFT OUTER JOIN	
🗉 🗑 Payroll	4		ions = dbo.dim_Regions.Region LEFT OUTER JOIN
PowerAnalytics_DemoConsol	5	dbo.dim_Months ON dbo.Factdata.dim_Month	
🗉 🗑 PowerAnalytics_SAP		<pre>dim_Months.Quarter = 'ist Quarter') AND (dbo.d: # Actua VS Budget = 'Actual') AND (dbo.Factdata</pre>	
🛞 🗑 ProductPlanning	(dbb.Pactuata.db	Actua_vs_budget = Actual) And (ubb.Factual)	a.dim_Accounts = Sales /
🗉 🗑 ReportingManagerLive			
🗉 🗑 sample			
🗃 🗑 Sample_Forex			
🗉 🗑 SmallDerno			
testOlationSQLAdmin			
🗉 冒 USABudget			
USING_OLATION			
USING_OLATION_Copy			
USING_OLATION_ORIG			
🛞 📕 Database Diagrams			
Tables Market Tables Market Tables			
System Tables III FileTables			
External Tables			
🗑 🗰 Graph Tables	100 % * 1		
dbo.dim_Actual_vs_Budget	I Results B Messages		
dbe.dim Months	ID Continent Region	Quarter Month Account Version Amount	
dbo.dim_Regions	1 68 South America Argentin	a 1st Quarter January Sales Actual 1234	
🔲 🎹 dbo.Factdata	2 69 South America Argentin	a 1st Quarter February Sales Actual 340	
m m dbs.OLATION	3 70 South America Argentin	a 1st Quarter March Sales Actual 270	
m m dbs.OLATION_USING_OLATION_ORIG	4 116 South America Brazil	1st Quarter January Sales Actual 1000	
dbs.PRODUCT_TEST	5 117 South-America Brazil	1st Quarter February Sales Actual 1000	
B dbo.PRODUCT_TEST_hierarchy	6 118 South America Brazil	1st Quarter March Sales Actual 1000	
dbo.TestDim			
🗉 🏢 dbo.TestDim_hierarchy			
🖃 🗰 Views			
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🛞 💼 External Resources			
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Im Intervice Broker			
🛞 🗰 Storage			
E Ecurity			
B Using_Olation_Secured Security			
B Security	 Query executed successfully. 	EC2AMAZ-RESEANO (14.0 RTM) EC2AM	MAZ-BRSEANO\Demo (56) USING OLATION ORIG 00.00.00 6

We are now in a position to show how this drill-through report can be used to find more information about the transaction data in a model that PowerExcel has reached: in short, from this worksheet a user can double-click on any of the filter Dimensions at the top of the page (red-boxed in the preceding image) and find the relevant data records.

3. As an example, to find the transactional records for *North America*, *Total Quarter*, doubleclick on Cell C5 (referencing the Region dimension). A SQL SS Live Dimension window appears:

SQL SS Live Dimension	
Show Region as a column in this report Soft rows by:	Filter Members .
Region	
No Soting	Cauta subtotals for matching rows Blank Line Above Blank Line Below

4. Click on the Filter Members button and the Select Members for Region dialog appears:



5. Delete South America in the display pane on the right and drag North America from the Members pane to there. Then click on the green checkmark, top right. Back in the SQL SS Live dialog, note that there are sorting options for the Region dimension data in the new drill-through report you will create (see drop-down in previous SQL SS Live image).

6. Click OK.

Similarly, select **Total Quarters** from among the Month dimension Members. The resulting Drill Through will appear, showing transactional records for *Actual*, *Sales Amount*, for *North America*, *Total Quarters*.

4	A	В	C	D	E	F	G	н	1
1	Database:	USING_OLAT	TON_ORIG						
2	Cube:	Sales							
3	Dimensio	Sales Measu	re Members(Amount)	Not Sorted	Show				
4		Version	Members(Actual)	Not Sorted	Show				
5		Region	Members(North America)	Not Sorted	Show				
6		Month	Members(Total Quarter)	Not Sorted	Show				
7		Account	Members(Sales)	Not Sorted	Show				
8									
9	OLAForm [®]	Table							
10									
11	ID	Version	Region	Month	Account	Amount			
12	50	Actual	Canada	January	Sales	1000			
13	51	Actual	Canada	February	Sales	2000			
14	52	Actual	Canada	March	Sales	850			
15	53	Actual	Canada	April	Sales	450			
16	54	Actual	Canada	May	Sales	800			
17	55	Actual	Canada	June	Sales	100			
18	56	Actual	Canada	July	Sales	745			
19	57	Actual	Canada	August	Sales	650			
20	58	Actual	Canada	September	Sales	620			
21	59	Actual	USA	January	Sales	1000			
22	60	Actual	USA	February	Sales	1235			
23	61	Actual	USA	March	Sales	890			
24	62	Actual	USA	April	Sales	960			
25	63	Actual	USA	May	Sales	960			
26	64	Actual	USA	June	Sales	800			
27	65	Actual	USA	July	Sales	1200			
28	66	Actual	USA	August	Sales	1250			
29	67	Actual	USA	September	Sales	1330			
30	113	Actual	Canada	October	Sales	0			
31	114	Actual	Canada	November	Sales	0			
32	115	Actual	Canada	December	Sales	0			

If you create a SUM of values for this report (which will yield *16840*) it will match the value in a PowerExcel Slice with the same parameters (yellow-highlighted below) that shows the same data point (green-highlighted):

B1	.6 • : × ✓ fx	16840										
	А	В	с	D	E	F	G	н	I.	J	к	L
1	Database:	USING_OLATIO	N_ORIG									
2	Cube:	Sales										
3	Dimensions:	Filter	Sales Mea	Members	Amount							
4		Filter	Version	Members	Actual							
5		Filter	Account	Members	Sales							
б		Column	Month	Range	\$B\$10:\$R\$	10						
7		Row	Region	Range	\$A\$11:\$A\$	518						
8												
9	OLAPivotTable											
10		Total Quarter	January	1st Quarte	February	March	April	2nd Quart	May	June	July	3rd Quarte
11	Argentina	4194	1234	1844	340	270	700	1170	270	200	370	1180
12	World	32234	4234	11819	4575	3010	3110	8240	3030	2100	3315	9975
13	South America	15394	2234	4844	1340	1270	1700	4170	1270	1200	1370	4180
14	Brazil	11200	1000	3000	1000	1000	1000	3000	1000	1000	1000	3000
15	Canada	7215	1000	3850	2000	850	450	1350	800	100	745	2015
16	North America	16840	2000	6975	3235	1740	1410	4070	1760	900	1945	5795
17	Mexico	0	0	0	0	0	0	0	0	0	0	0
18	USA	9625	1000	3125	1235	890	960	2720	960	800	1200	3780
19												
20												

6.3 SQL SS Live

We will now consider another licensed feature, **SQL SS Live**, which works in a way similar to a Drill Through (both use the OLAFormTable PowerExcel function to return values) and with which we will show the Insert/Delete capability in coordination with a drill through sheet.

1. Start with a PowerExcel Slice like the following, which shows *Budget* numbers for *Sales*, *Amount* (Filters), with the *Month* dimension on Columns and *Region* on Rows.

H1	2	•	X 🗸	<i>f</i> _x 158	1799													
4	А	в	с	D	E	F	G	н	1	J	К	L	м	N	0	Р	Q	R
1	Database:	USING_OL	ATION_OF	RIG														
2	Cube:	Sales																
3	Dimensio	Filter	Sales Mea	Members	Amount													
4		Filter	Version	Members	Budget													
5		Filter	Account	Members	Sales													
6		Column	Month	Range	\$B\$10:\$R\$	10												
7		Row	Region	Range	\$A\$11:\$A\$	518												
8																		
9	OLAPivot1	Fable																
10		Total Qua	January	1st Quarte	February	March	April	2nd Quart	May	June	July	3rd Quart	August	Septembe	October	4th Quart	Novembe	December
11	Argentina	11200	1500	5000	1500	2000	2000	6200	2000	2200	0	0	0	0	0	0	0	0
12	World	268963	15750	71500	15750	40000	18100	158799	118099	22600	6444	19332	6444	6444	6444	19332	6444	6444
13	South Am	41200	6000	19000	6000	7000	7000	22200	7000	8200	0	0	0	0	0	0	0	0
14	Brazil	30000	4500	14000	4500	5000	5000	16000	5000	6000	0	0	0	0	0	0	0	0
15	Canada	24400	2000	6000	2000	2000	2000	6400	2000	2400	2000	6000	2000	2000	2000	6000	2000	2000
16	North Am	227763	9750	52500	9750	33000	11100	136599	111099	14400	6444	19332	6444	6444	6444	19332	6444	6444
17	Mexico	135699	1750	28500	1750	25000	2100	107199	102099	3000	0	0	0	0	0	0	0	0
18	USA	67664	6000	18000	6000	6000	7000	23000	7000	9000	4444	13332	4444	4444	4444	13332	4444	4444

- 2. Note that the cursor is placed on Cell H12, at the intersection of World, 2nd Quarter.
- 3. Perform a **Drill Through**, making sure to uncheck Read Only and proceeding to create it on a new workbook.

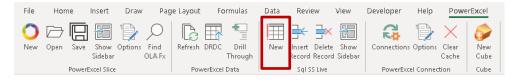
The result will be as follows:

ſ

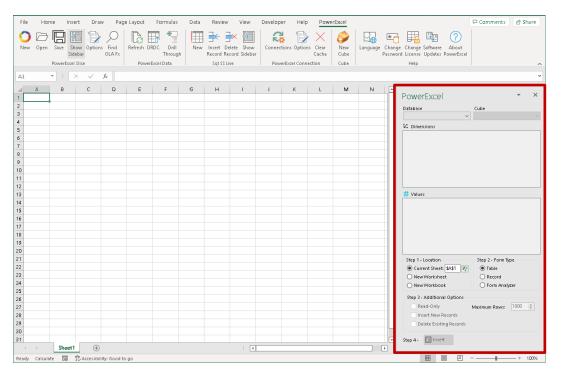
	A	В	С	D	E	F
1	Database:	USING_OL	ATION_OF	:IG		
2	Cube:	Sales				
З	Dimensio	Sales Mea	Members	Not Sorte	Show	
4		Version	Members	Not Sorte	Show	
5		Region	Members	Not Sorte	Show	
6		Month	Members	Not Sorte	Show	
7		Account	Members	Not Sorte	Show	
8						
9	OLAFormT	able				
10						
11	Sales Mea	Version	Region	Month	Account	Value
12	Amount	Budget	Argentina	April	Sales	2000
13	Amount	Budget	Argentina	May	Sales	2000
14	Amount	Budget	Argentina	June	Sales	2200
15	Amount	Budget	Brazil	April	Sales	5000
16	Amount	Budget	Brazil	May	Sales	5000
17	Amount	Budget	Brazil	June	Sales	6000
18	Amount	Budget	Canada	April	Sales	2000
19	Amount	Budget	Canada	May	Sales	2000
20	Amount	Budget	Canada	June	Sales	2400
21	Amount	Budget	Mexico	April	Sales	2100
22	Amount	Budget	Mexico	May	Sales	102099
23	Amount	Budget	Mexico	June	Sales	3000
24	Amount	Budget	USA	April	Sales	7000
25	Amount	Budget	USA	May	Sales	7000
26	Amount	Budget	USA	June	Sales	9000
27						

Note in the above image the OLAFormTable function, boxed in red.

4. Next, open a new spreadsheet (or create a new tab in the current workbook). Rather than create a New Slice, click on the **New** icon in the SQL SS Live group (see boxed, in the next image).



The right-hand pane (boxed in the next image) is one that we have not seen before—it is for use specifically with the SQL SS Live capability:



This pane works, at the top, in the same way as the PowerExcel Slice pane we have been working with: the first step is to select a Database and a Cube in that database. Here, below, the USING_OLATION_ORIG database and the Sales cube are selected.

PowerExcel	~ ×
Database	Cube
USING_OLATION_ORIG ~	Sales ~
🖾 Dimensions	
Sales Measure: Amount L'U Version: Variance L'U Region: World L'U Month: Total Qu	2
☐ L' Account: Margin	
# Values	
Step 1 - Location	Step 2 - Form Type
Ourrent Sheet: \$4\$1 2	Table
New Worksheet	Record
New Workbook	 Form Analyzer
Step 3 - Additional Options Read-Only Insert New Records Delete Existing Records	Maximum Rows: 1000 🜲
Step 4 - 🔲 Insert	

Note that in the top box that fields from the Fact table in the underlying relational database are shown—specifically, the fields that have been used to create Dimensions in the Olation cube. These are *Sales Measure*, *Version*, *Region*, *Month*, and *Account*. Any additional fields—those that are *not* used in the cube creation, but which appear in the Fact table anyway—will appear in the second box, titled # Vaues. (As there are no such fields/dimensions, this box is empty. It is worth noting that if there were any fields/dimensions, then data from them could be selected to appear in the following steps.)

5. For Step 1, select where you would like the Form (which is what SQL SS Live creates) to be created—here, Current Sheet is selected.

[Note, in the current version Steps 2 and 3 are not operable.]

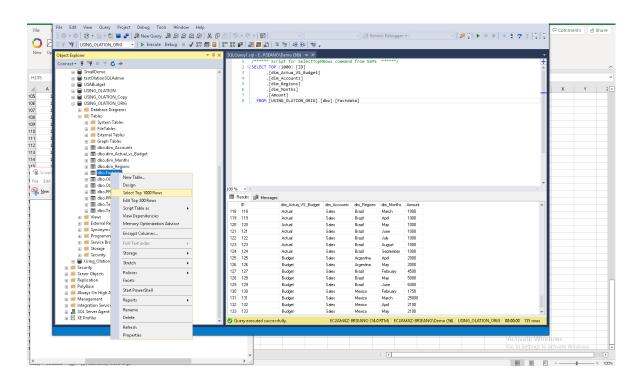
Click Insert: depending on the number of Maximum Rows selected, the entire Fact data table from the underlying relational database will appear, with the ID column show at the right (Column A):

	А	В	С	D	E	F	Ģ
1	Database:	USING_OL	ATION_OR	lG			
2	Cube:	Sales					
3	Dimensio	Sales Mea	Members	Not Sorte	Show		
4		Version	Members	Not Sorte	Show		
5		Region	Members	Not Sorte	Show		
б		Month	Members	Not Sorte	Show		
7		Account	Members	Not Sorte	Show		
8							
9	OLAFormT	able					
10							
11	ID	Version	Region	Month	Account	Amount	
12	1	Budget	Canada	January	Sales	2000	
13	2	Budget	USA	January	Sales	6000	
14	3	Actual	Brazil	October	Sales	1000	
15	4	Actual	Brazil	Novembe	Sales	200	
16	5	Actual	Brazil	December	Sales	1000	
17	6	Actual	Brazil	January	Cost of Sa	500	
18	7	Actual	Brazil	February	Cost of Sa	500	
19	8	Actual	Brazil	March	Cost of Sa	500	
20	9	Actual	Brazil	April	Cost of Sa	500	
21	10	Actual	Brazil	May	Cost of Sa	500	
22	11	Actual	Brazil	June	Cost of Sa	500	
23	12	Actual	Brazil	July	Cost of Sa	500	
24	13	Actual	Brazil	August	Cost of Sa	500	
25	14	Actual	Brazil	Septembe	Cost of Sa	500	
26	15	Actual	Brazil	October	Cost of Sa	500	

[the intervening Rows 27 - 124 would appear here]

125	123	Actual	Brazil	August	Sales	1000	
126	124	Actual	Brazil	Septembe	Sales	1000	
127	125	Budget	Argentina	April	Sales	2000	
128	126	Budget	Argentina	May	Sales	2000	
129	127	Budget	Brazil	February	Sales	4500	
130	128	Budget	Brazil	May	Sales	5000	
131	129	Budget	Brazil	June	Sales	6000	
132	130	Budget	Mexico	February	Sales	1750	
133	131	Budget	Mexico	March	Sales	25000	
134	132	Budget	Mexico	April	Sales	2100	
135	133	Budget	Mexico	May	Sales	2100	
136	134	Budget	Mexico	June	Sales	3000	
137	140	Budget	Mexico	May	Sales	99999	

IMPORTANT: The PowerExcel **SQL SS Live form** returns values from <u>the entire Fact data table</u> of the underlying relational database. The below image shows the last few rows from the example database that we are using when Select Top 1000 Rows is selected, as shown. The transactions shown from this table match those in the form shown in the preceding image. (Below shows 20 or so rows of these transactions.)



A few observations are worth making here, as we look again at the Form generated by the SQL SS Live form:

- a. The spreadsheet has been created by the OLAFormTable PowerExcel function (boxed in blue in the last image of the form), just as is the Drill Through.
- b. One might make the observation that the Drill Through returns values for the data point selected—a composite of a single point—while the SQL SS Live form brings back the whole megillah, i.e., the entire Fact data table of the underlying database.
- c. Like the Drill Through spreadsheet, we can change Dimension members, near the top of the spreadsheet, is indicated among the PowerExcel functions:

1	А	В	с	D	E	F
1	Database:	USING_OLA	TION_ORIG			
2	Cube:	Sales				
3	Dimensio	Sales Meas	Members(Amount)	Not Sorted	Show	
4		Version	Members(Variance)	Not Sorted	Show	
5		Region	Members(World)	Not Sorted	Show	
6		Month	Members(Total Quarter)	Not Sorted	Show	
7		Account	Members(Margin)	Not Sorted	Show	
8						
9	OLAForm1	able				
10						
11	ID	Version	Region	Month	Account	Amount
12	1	Budget	Canada	January	Sales	2000
13	2	Budget	USA	January	Sales	6000
14	3	Actual	Brazil	October	Sales	1000

6. Returning to the SQL SS Live form first created, we will now change this report (effectively, "multidimensionally") by making Member selections *Budget*; *North America*, and: 2nd Quarter) and Sales. Each time you double-click to make selections, you will sequence through 2 windows: the first to make particularized selections regarding format, and: the second, after clicking the **Filter Members** button, which takes you to the Select Members for <u>Dimension</u> dialog.

The resulting new form will look as follows:

	А	В	с	D	E	F
1	Database:	USING_OLA	TION_ORIG			
2	Cube:	Sales				
3	Dimensio	Sales Meas	Members(Amount)	Not Sorted	Show	
4		Version	Members(Budget)	Not Sorted	Show	
5		Region	Members(North America	Not Sorted	Show	
6		Month	Members(2nd Quarter)	Not Sorted	Show	
7		Account	Members(Sales)	Not Sorted	Show	
8						
9	OLAForm1	Table				
10						
11	ID	Version	Region	Month	Account	Amount
12	20	Budget	Canada	April	Sales	2000
13	21	Budget	Canada	May	Sales	2000
14	22	Budget	Canada	June	Sales	2400
15	31	Budget	USA	April	Sales	7000
16	32	Budget	USA	May	Sales	7000
17	33	Budget	USA	June	Sales	9000
18	132	Budget	Mexico	April	Sales	2100
19	133	Budget	Mexico	May	Sales	2100
20	134	Budget	Mexico	June	Sales	3000
21	140	Budget	Mexico	May	Sales	99999
22						

7. To show how to **Insert** a record:

Click on a cell from the OLAFormTable results—e.g., Cell C17, which concerns *Budget*, *USA*, *June*. Click on the Insert Record icon on the PowerExcel toolbar. Note that a Row is inserted above it.

11	ID	Version	Region	Month	Account	Amount
12	20	Budget	Canada	April	Sales	2000
13	21	Budget	Canada	May	Sales	2000
14	22	Budget	Canada	June	Sales	2400
15	31	Budget	USA	April	Sales	7000
16	32	Budget	USA	May	Sales	7000
17	0					
18	33	Budget	USA	June	Sales	9000

 Abiding by the form's Dimensional logic in or copy a Row with the information you wish to insert: here, below *Budget*, *USA*, *May*, *Sales* has been giving a value (in the Amount column) of **88888888**—we will use an especially large number to make it stand out. <u>Note</u>: do not enter anything for ID; indeed, after typing in the Amount value, an ID is automatically generated (141, as below.)

16	32	Budget	USA	May	Sales	7000
17	142	Budget	USA	May	Sales	88888888
18	33	Budget	USA	June	Sales	9000
19	132	Budget	Mexico	April	Sales	2100

9. If we return to the drill-through spreadsheet created at the beginning of this section, and click F9 to refresh the data, we will see this new value and how it affected all intersections (yellow-highlighted in the image below) that concern *May*, 2nd Quarter, Total Quarter, USA, North America, and World.

	А	В	С	D	E	F	G	н	1	J	К	L	м	N	0	Р	Q	R
1	Database:	USING_OL	ATION_OF	RIG														
2	Cube:	Sales																
3	Dimensions:	Filter	Sales Mea	Members	Amount													
4		Filter	Version	Members	Budget													
5		Filter	Account	Members	Sales													
6		Column	Month	Range	\$B\$10:\$R\$	510												
7		Row	Region	Range	\$A\$11:\$A	\$18												
8																		
9	OLAPivotTable																	
10		Total Qua	January	1st Quarte	February	March	April	2nd Quarter	May	June	July	3rd Quarte	August	Septembe	October	4th Quarte	Novembe	December
11	Argentina	11200	1500	5000	1500	2000	2000	6200	2000	2200	0	0	0	0	0	0	0	0
12	World	89157851	15750	71500	15750	40000	18100	89047687	89006987	22600	6444	19332	6444	6444	6444	19332	6444	6444
13	South America	41200	6000	19000	6000	7000	7000	22200	7000	8200	0	0	0	0	0	0	0	0
14	Brazil	30000	4500	14000	4500	5000	5000	16000	5000	6000	0	0	0	0	0	0	0	0
15	Canada	24400	2000	6000	2000	2000	2000	6400	2000	2400	2000	6000	2000	2000	2000	6000	2000	2000
16	North America	89116651	9750	52500	9750	33000	11100	89025487	88999987	14400	6444	19332	6444	6444	6444	19332	6444	6444
17	Mexico	135699	1750	28500	1750	25000	2100	107199	102099	3000	0	0	0	0	0	0	0	0
18	USA	88956552	6000	18000	6000	6000	7000	88911888	88895888	9000	4444	13332	4444	4444	4444	13332	4444	4444

10. You can likewise use the **Delete Record** icon in the SQL SS Live toolbar group to delete a record in a form

6.4 **DRDC - Dynamic Relational Database Connectivity**

DRDC stands for Dynamic Relational Database Connectivity, meant to convey the fact that data represented in a PowerExcel Slice can be dynamically available from a relational database (e.g., SQL Server) to other end-user products, including Business Intelligence tools like Power BI and Tableau. As shown below, with a single click, a Slice can create a View in an underlying database; as the data in the View changes, other products will reflect those changes dynamically. In this respect, DRDC is a new and innovative way to connect and unite different data and systems.

IMPORTANT: In addition to being a licensed feature, DRDC requires that the Olation Server be installed and licensed. Also, the PowerExcel using DRDC must have rights to create the View in the underlying relational database.

The procedure for using DRDC—essentially saving the relational View—is quick and straightforward:

 Create a PowerExcel Slice, like the one shown below. [Note: as above, the Olation Server is running, and the database we use in this example concerns a model in SQL Server, named USING_OLATION_ORIG; the Cube is Sales—circled in the following image.]

Power**Excel**

1	O 🗁	me Inser → 日 en Save	- 	ptions Find OLA		DRDC	view Viev	te New		elete Shor	v Con	nections Op	tions Clear Cache	New Cube	Language		Comments St Change Software About License Updates Powerfxcel
		Davisar	xcel Slice	ULA	rx .	PowerExce	2	5	Sql SS I			PowerExcel Co		Cube		Password	Help
																	nep i
45)	\sim : \times	$\sqrt{f_x}$	=@OLAP	ivotTable(\$	B\$1,\$B\$2,\$	\$B\$3:\$E\$3,\$	B\$5:\$E\$5,\$	B\$7:\$E\$7,\$	B\$6:\$E\$6,	B\$4:\$E\$4	I,\$B\$11,FAL	SE, FALSE, FA	.SE, FALSE	TRUE)		
ļ	А	В	С	D	E	F	G	н	1	J	К	L	м	N	0	P 🔺	
I	Database:	Using_Ola	tion_ORIO	3													PowerExcel
		Sales															Database Cube
	Dimensio	Filter	Sales Me	a Members	Amount												Using_Olation_ORIG V Sales
		Filter		Members													Filters
		Filter		Members													Sales Measure: Amount
		Column		Range	\$B\$10:\$I\$1												E sales Measure: Amount ∠ Version: Budget
		Row	Region	Range	\$A\$11:\$A\$	13											L'Account: Sales
	OLAPivot"																
		January			1st Quarte				2nd Quarte	er							
	JSA	6000				7000		9000	23000								Columns
	Vlexico	1750				2100		3000	7200								ピ Month: January,February,March,1st Quarter,April,May,J
	Canada	2000	2000	2000	6000	2000	2000	2400	6400								
																	🚰 Rows
																	12 Region: USA, Mexico, Canada
																	1
																	<
																	Step 1 - Location Step 2 - Slice Type
																	Current Sheet: \$A\$1 2 Perspective
																	O New Worksheet O B Functions
																	O New Workbook O Power Analyzer
																	Step 3 - Additional Options
																	Hide Empty Rows Allow Excel Functions
																	Delete Removed Rows Format Cells by Type
																	Dynamic Row Labels
																	Step 4 - 🔲 Update
																	,

- 2. Click the **Save** icon on the PowerExcel ribbon and proceed to save the Slice as detailed in the previous section. Here, the example saved Slice is given the name *halfyrBudgetNA*. [Note: strictly speaking, saving the Slice is not an absolute requirement for the creation of the View.]
- 3. At this point you can create the View via DRDC by, first, clicking on the DRDC icon on the PowerExcel ribbon:



4. In the ensuing Push Slice to DRDC dialog, enter the SQL Server Address; specify the privileges you will use to connect to SQL Server (here, Windows Authentication); specify the database where you wish to create the View (here, USING_OLATON_ORIG). Also, provide a View Name (e.g., as with the Slice, halfyrBudgetNA) and select the Data Type for the View.

Push Slice To DRDC	×
SQL Server Connection SQL Server Address: localhost Connect using Windows Authentication	
User: Password:	
Database: USING_OLATION_ORIG ~	
DRDC View	
View Name: halfyrBudgetNA	
Data Type	
Numeric Only O Include Text Timeout: 15 (secs)	
Save Cancel	

5. Click Save. A message will appear that indicates that the View has been created.

Push to DRDC	\times
Successfully created new view halfyrBudgetNA	
ок	

6. Click OK.

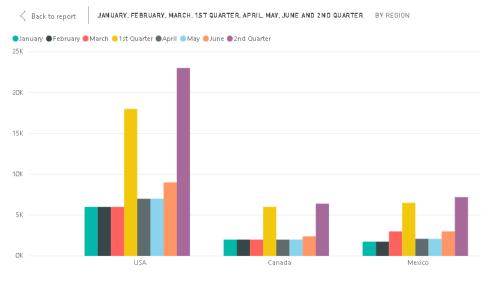
Next, to check the View in SQL Server, open SQL Server Management Studio. Locate the database into which you created the View and expand on Views: the View created by DRDC from the PowerExcel Slice will appear (in this example, *halfyrBudgetNA*, as shown circled in the following image).

Object Explorer
Connect 🕶 🌹 🏋 🗮 🝸 🖒 🚸
😑 🐻 localhost-example
😑 📕 Databases
😠 🛑 System Databases
😠 🛑 Database Snapshots
😑 📄 USING_OLATION_ORIG
🕢 📻 🖬 Database Diagrams
🕀 🛑 Tables
🖃 🛑 Views
🕢 📻 📻 System Views
🕢 🗇 🗄 🗄 🗄 🗄 🗄
🗉 🛑 External Resources
🗉 🛑 Synonyms
🗉 🛑 Programmability
🗉 🛑 Service Broker
🕀 🛑 Storage
🖽 🛑 Security

7. Next, right-click on the View and choose **Select Top 1000 Rows**. The View results will appear as follows—matching the saved PowerExcel Slice.

	🖽 Results 📑 Messages														
	Region	January	February	March	1st Quarter	April	May	June	2nd Quarter						
1	USA	6000	6000	6000	18000	7000	7000	9000	23000						
2	Mexico	1750	1750	3000	6500	2100	2100	2100	6300						
3	Canada	2000	2000	2000	6000	2000	2000	2400	6400						

This data can quickly be transformed into an impressive visualization, as done below with this **Power BI** dashboard:

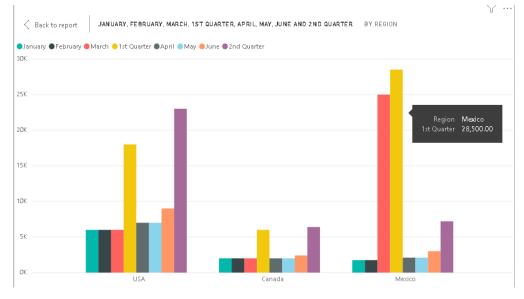


And this dashboard will reflect changes made to the underlying model to which PowerExcel is dynamically connected. If a user makes an entry—let's say an unusually large *Budget* number in *March*, for *Sales* in *Mexico*, as below (see the rose-highlighted cell, **25000**)--

	А	В	С	D	Е	F	G	Н	Ι
1	Database:	Using_Ola	tion_ORIG						
2	Cube:	Sales							
3	Dimensior	Filter	Sales Mea	Members	Amount				
4		Filter	Account	Members	Sales				
5		Filter	Version	Members	Budget				
6		Column	Month	Range	\$B\$10:\$I\$	10			
7		Row	Region	Range	\$A\$11:\$A\$13				
8									
9	OLAPivotT	able							
10		January	February	March	1st Quarte	April	May	June	2nd Quarter
11	USA	6000	6000	6000	18000	7000	7000	9000	23000
12	Mexico	1750	1750	25000	28500	2100	2100	3000	72 00
13	Canada	2000	2000	2000	6000	2000	2000	2400	6400

Then the model will recalculate, increasing the *1st Quarter* results (orange-highlighted in the image above, *13500*). It is worth noting that this *1st Quarter* figure, **28500**, is calculated in the underlying model (not in Excel itself).

As a consequence, the Power BI or other dashboard—or indeed any third-party tool that sources data from the DRDC Slice View—will also update dynamically.



All tools, all front ends—indeed, all applications and even databases—can be brought together...all through the use of **PowerExcel**!

And that, in sum, is the power of PowerExcel!



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