Ex06

Introduction: Information is for decision making. Information retrieval is a big topic. Data Visualization is an art in providing valuable information to decision makers. Power BI provides many visual elements where we can use them to prepare useful information via reports and dashboards. This exercise will cover basic reporting features in Power BI Desktop.

Objective: This exercise is to demonstrate and explain the following Power BI features

- What is the impact of Relationship Direction?
- How to using Map Visuals to present geographical related information?
- How to add more external Visuals?
- What are the different Filtering Scopes?
- How to Drill Down the Hierarchical data?
- How to Drill Through from one report page to other page?
- What is Matrix?
- How to create Virtual Columns at the reporting level?
- How to create and use Measures?

Pre-requisites:

- 1) Understand how to perform data loading from MS Excel
- 2) Know how to transformation data
- 3) Be able to construct Data Model

Steps:

Part-1: Prepare Data Workbook and create Data Model

Note: In this exercise you will only use the provided MS Excel workbook as the only data source. Make sure that you already hide the total row of all the Tables in the Excel workbook before saving it.

- 1. Start a new Power BI desktop project with name "Ex06"
- 2. Load an "Ex06.xlsx" Excel file provided.



3. Select the following Tables and Worksheets:

Navigator			
	٩	Unit So	ld by States
Display Options 👻	Lo	State	Unit Sold
🖌 🛑 Demo.xlsx [12]			1 15
✓ III TblDepartment			9 20
✓ III TblEmployee			8 3
✓ III TblRace			
Employee			
🗆 🌐 Lists			
✓ 🛄 Measurement			
Eivoted Data			
Product Sold			
✓ 📖 Sales Person Performance			
□ Gales Records			
Employed Sheet1			
✓ ⊞ Unit Sold by States			

4. While still under Navigator dialog box, select "Transform Data":



150

200

35

6. Now you should be under the Query Editor:

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File	Home	Transform	1	Add Column	View To	ols H	elp							~ ?
Close & Apply • Close	New Source • 9	Recent E Sources V D ew Query	nter ata	Data source settings Data Sourc	Manage Parameters • Parameters	Refresh Preview •	Properties Advanced Editor Manage Query	Ma Col	umns -	Reduce Rows •	2↓ ∡↓ Sort	Split Column	Group By	Data Ty Use J ₂ Rep Transt
Queries	s [6]	<		1 ² 3 State	Ŧ	1 ² 3 Unit	Sold 💌		Que	ery Setti	ngs			×
III THE	epartment		1		i		150		⊿ PI	ROPERT	ES			
Tbie	mployee		2		<u> </u>	2	200		N	ame				
Tbir	lace		3		ł	3	35		L	Jnit Sold	by Stat	es		
Mea	surement								AI	l Propert	ies			
🛄 Sale	s Person Pe	erformance							⊿ A	PPLIED S	TEPS			
📰 Unit	Sold by St	ates								Source	2			-#-
										Navig	ation			*
										Promo	oted H	eaders		*
									2	× Chang	ed Typ	pe		
2 COLUMN	IS, 3 ROWS	Column pr	ofiling	based on top 10	000 rows					P	REVIEV		ADED AT	Г 12:00 PM

7. Select "TblDepartment", and pay attention to the "Applied Steps":

🤳 I 🔚	≂ ∥ Ex06 ·	- Power Qu	uery Eo	litor											
File	Home	Transfor	m	Add Column	View To	ools He	ols Help							^ ?	
Close & Apply	New Source • S	Recent	Enter Data	Data source settings	Manage Parameters •	Refresh Preview •	Properties	Mar Colu	nage Imns •	Reduce Rows •	2↓ ∡↓	Split	Group	Data Ty I Use 1. 2 Rep	
Close	Ne	ew Query		Data Sourc	Parameters		Query				Sort		-	Transt	
Queries	s [6]	<		→ A ^B _C DID	•	A ^B _C Depa	rtment Name 💌 1	² 3 1	Que	ry Settir	ngs			\times	
ТЫС	Department		1	FN		Finance			⊿ PR	OPERTI	ES				
The	mployee		2	HR		Human Re	esource		Na	me					
This	lace		3	IT	IT		Information Technology		TblDepartment						
III Mea	surement		4	OP	OP		Operation		All Properties						
	surement		5	QA	QA		Quality Assurance								
III Sale	s Person Pe	ertormance	6	RD		Research	& Development		⊿ AF	PPLIED S	TEPS				
🛄 Unit	Sold by Sta	ates	7	SA		Sales				Source				*	
										Naviga	ation			-₩-	
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								1							

So far these are the default steps produced by the Query Editor. Next, we will perform additional transformation steps to this table.

- a. Removed Department Head Name Column:
 - i. If needed, scroll until you can see the "Department Head" column
 - ii. Right click, select Remove

	Queries [6]			1 ² 3 HID	A ^B _C Head	Ē	Сору
1	ThiDenartment	1	14	1028	Shila Hamz	×	Remove
1		2	5	1022	Azis		Remove Other Columns
	I DIEmployee	3	13	1010	Ali		Duplicate Column
	III TblRace	4	32	1015	Ahmad	5	Add Column From Examples
	Measurement	5	8	1017	Aaron		Remove Duplicates
	Salas Darson Darformance						nemore pupiledes

iii. A new step added. Now right click to rename it to "Removed Department Head Name Column".



- b.
- 8. Select "TblEmployee", and pay attention to the "Applied Steps":

File Home	Transfor	m	Add Column	View To	ols Help				\sim
Close & Apply • Source • S	Recent E	Enter Data	Data source settings	Manage Parameters •	Refresh Preview • Manage •	Manage Columns ▼ Reduce	Split Group Column + By	Data Type: Whole Number • Use First Row as Headers 2 Applace Values	·
Close Ne	ew Query		Data Sourc	Parameters	Query	Sort		Iransform	
Queries [6]	<		1 ² 3 EID	Ψ.	A ^B _C Name	A ^B _C Gender	▼ A ^B _C Departme	Query Settings	\times
TblDepartment		1		1000	Tong Sam Pah	м	П	▲ PROPERTIES	
TblEmplovee		2		1002	Yong Tau Foo	м	FN	Name	
TblBace		3		1005	Low Mee	F	IT	TblEmployee	
Measurement		4		1008	Low Shi Fun	F	IT	All Properties	
Calas Damas Da		5		1010	Ali	м	HR		
ales Person Pe	normance	6		1012	Abu	M	FN	▲ APPLIED STEPS	
Unit Sold by Sta	ates	7		1015	Ahmad	М	IT	Source	8
		8		1017	Aaron	M	OP	Navigation 3	5
		9		1020	Ah Chong	M	SA	Changed Type	
		10		1022	Azizi	M	RD		
		11		1028	Shila Hamzah	F	SA		
		12		1030	Narayanan	M	FN		
		13		1052	r auman	T	34		
			<				>		

So far these are the default steps produced by the Query Editor. Next, we will perform additional transformation steps to this table.

- a. Replace null Race as Empty:
 - i. If needed, scroll until you can see the "Race" column
 - ii. Right click Race column title, then select Replace Values...



iii. In the Replace Values dialog box, just fill in the "null", then press OK to confirm

Replace Values			
Replace one value with another in the s	elected columns.		
Value To Find	_		
null			
Replace With	_		
Advanced options			
			K Can

- iv. Rename the step generated as "Replaced null Race as Empty"
- b. Remove Chart column
 - i. If needed, scroll until you can see the "Chart" column
 - ii. Right click on the Chart column title, then select Remove
 - iii. Rename the step generated as "Removed Chart column"
- c. Add Monthly Salary Virtual Column
 - i. Go to Add Column ribbon
 - ii. Select Custom Column

-									
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File	Home	Transform		Add Column	View	Tools	Help		
Column F Example	Luston Colum	n Invoke Cus n Functio	tom i	Conditiona conditiona conditional conditi	l Column mn - Column	[ASC] Format	Merge ABC 123 Extract	Columns	XG Statistics ▼ Image: Standard ▼ 10 ² Scientific ▼
		Gener	al				From Text	t	From
Querie	s [6]	<		_	1 ² 3 Superv	/isor	-	1 ² 3 Age	
🖽 тыс	Department		1				1005		
📰 Tble	mployee		2				1015		

iii. In the Custom Column dialog box, fill in the following:

Custom Column

Add a column that is computed from the other columns.

New column name	
Monthly Salary	
Custom column formula 🕕	Available col
= (1.0 - 0.11) * [Basic Salary]	EID
	Name
	Gender
	Departmen
	Race

- iv. Select **OK** to confirm
- v. Rename the step generated as "Added Monthly Salary Column"

- d. Add Employer Contribution Conditional Virtual Column
 - i. Make sure that you still under Add Column ribbon tab
 - ii. Select Conditional Column

📕 拱 🗢 Ex06 - Power Que	ry Editor		
File Home Transform	Add Column View	Tools Help	
Column From Custom Invoke Cus Examples - Column Functio	tom □ Duplicate Column	Format	Xor Statistics ▼ Standard ▼ 10 ² Scientific ▼
Gener	ai	From Text	From
Queries [6] <		visor 💌 1 ² 3 Age	[
III TblDepartment	1	1005	
III TblEmployee	2	1015	

iii. In the Add Conditional Column dialog box, prepare the following:

Add Conditional Column

Add a conditional column that is computed from the other columns or values.

Employer Contribution Column Name Operator Value ① Output ① If Basic Salary is less than 123 * 5000 Then 123 * 0.13 •• Add Clause Else ①	vew column name	_				
Column Name Operator Value ① Output ① if Basic Salary Ises than Image: ABC + 5000 Then Image: ABC + 70.13 Image: ABC + 70.13 Add Clause Image: ABC + 70.13 Image: ABC + 70.13 Image: ABC + 70.13 Image: ABC + 70.13 Image: ABC + 70.13	Employer Contribution					
f Basic Salary v is less than v ABC 123 5000 Then ABC 0.13 ··· Add Clause	Column Name	Operator	Value 🕕	Outpu	ut 🛈	
Add Clause	f Basic Salary	▼ is less than	- ABC - 5000	Then 123	0.13	
23 * 0.12	Add Clause					

- iv. Select OK to confirm
- v. Rename the step generated as "Added Employer Contribution Column"
- e. Add EPF Virtual Column
 - i. Select Custom Column again under Add Column ribbon tab
 - ii. Add another virtual column as following:

Custom Column

Add a column that is computed from the other columns.

New column name	
EPF	
Custom column formula 🕕	Availal
= (0.11 + [Employer Contribution]) * [Basic Salary]	EID
	Nam
	Genc
	Depa

- iii. Select **OK** to confirm
- iv. Rename the step generated as "Added EPF Column"

 \times

- f. At this point, the Applied Steps for this TblEmployee table should be as below:
 - APPLIED STEPS
 Source
 Navigation
 Changed Type
 Replaced null Race as Empty
 Removed Chart column
 Added Monthly Salary Column
 Added Employer Contribution Column
 Added EPF Column
- 9. Select "Sales Person Performance" table, showing that the table is not well formed. We need to fill up all the null values:

Queries [6]	<		A ^B _C Country	1 ² 3 State	1 ² 3 Sales Person	1 ² 3 Year
TblDepartment		1	my	9	1020	
TblEmployee		2	nuli	null	null	
ThiRace		3	nuli	1	1032	
		4	nuli	null	null	
Measurement		5	sg	60	1028	
Sales Person Performant	ce					

- a. Right click on the "Country" column, select Fill \rightarrow Down
- b. Repeat the same for "State" and "sales Person" columns
- c. Noticed that all these 3 steps will be combined as a single Applied Step. Rename the step generated as "Filled Down null values"
- 10. In order to resolve the Gender code from TblEmployee, we going to add a new table with name "TblGender" for lookup.
 - a. Back to **Home** ribbon tab
 - b. Select Enter Data

📕 l 🔒 :	₹ Ex06 -	Power Qu	uery Edito	or		
File	Home	Transf	orm	Add Column	View	Tools
×				Å		
Close & Apply 🔻	New Source •	Recept Sources •	Enter Data	Data source settings	Manage Parameters	+ P
Close	N	lew Query		Data Sources	Parameters	;
Queries	Queries [6] Enter Data					
III TblDepartment			Create pastin	e a new table by ig in new conter	typing or nt.	
		Themployee 2 my				

c. Prepare the following under the **Create Table** dialog box:

	Code	Value	*		
1	М	Male			
2	F	Female			
3	0	Others			
*					
	ThiCandar	r			
Nam	ie. Tbidender				
Nam					
Nam	ie. Tbidender				

Fil	le	Home	Transf	orm	,	Add Column	View To	ols Help
Clos	× e &	New Source •	Recent Sources •	En Da	ter ata	Data source settings	Manage Parameters •	Refresh Preview + Manage +
Clo	se	N	lew Query			Data Sources	Parameters	Query
Qu	ueries	5 [7]		<		A ^B C Code	×	A ^B _C Value
	тыс	epartmen	t		1	М		Male
	TblE	mployee			2	F		Female
	THR	ace			3	0		Others
	Mea	surement						
	Sale	s Person P	erforman	e				
	Unit	Sold by S	tates					
	тыс	Gender						

11. Now we will complete the loading from our Excel data source. Under **Home** ribbon tab, select **Close & Apply**.



12. Wait until Apply query changes completed.

Loading Data from Excel Microsoft SQL Server

Note: Consult training instructor how to set up the database MyDB. In this section, we assume the database is ready under local computer.

- 1. Make sure now you are under the Power BI main window.
- 2. Go to **Home** ribbon tab.
- 3. Select SQL Server under the Data group

B 9 0		Ex06 - Pow
File Home In	sert Modeling View Help	
Paste S Format painter	Get Excel Power BL SQL Enter Recent data v Server data sources v	Transform Refresh New visual
Clipboard	Data	Queries

4. Under SQL Server database dialog box, prepare the following:

SQL Server database		
Server 🛈		
(local)		
Database (optional)		
MyDB		
Data Connectivity mode ① ● Import		
O DirectQuery		
> Advanced options		
	OK Can	cel

- 5. Select **OK** to continue.
- 6. Under Navigator dialog box, Select "Country" and "State" table only.
- 7. Select Load to start loading the data. No transformation needed for this data source.
- 8. Select the **Data** view to view the loaded data for each table

8	5	N N	Ex06 - Power	3I Desktop	CK Leng 🔵 — 🗆
File	2	Home	Help Table to	ols	
Ø N	lame St	ate			
			Mark as	date Manage	New Quick New New
		_	table	 relationships 	measure measure column table
		Structure	Calend	lars Relationships	Calculations
000	×	\checkmark			Fields
—	ID 💌	Country 💌	Name 💌	LocalName 💌	
Ħ	1	my	Selangor	Selangor	▲ Search
82	2	my	Pahang	Pahang	
48	3	my	Sabah	Sabah	V 🎛 Country
	4	my	Sarawak	Sarawak	🗸 🕁 Measurement
	5	my	Perlis	Perlis	Sales Person Perf.
	6	my	Kedah	Kedah	
	7	my	Negeri Sembilan	Negeri Sembilan	→ III State
	8	my	Johor	Johor	✓
	9	my	Penang	Pulau Pinang	🗸 🏢 TblEmployee
	10	my	Terengganu	Terengganu	
	11	my	Kelantan	Kelantan	
	12	my	Perak	Perak	→ III IblRace
	13	my	Malacca	Melaka	✓
	14	my	Federal Territories	Wilayah Persekutuan	
	15	cn	Andong	安乐	
	10	cn	Annui	安閑	
	10	cn	Fujian	宗响小	
	10	cn	Gansu	旧建	
	20	cn	Guangdong	日州	
	20	cn	Guangxi	广西	
	22	cn	Guizhou	, 日 	
				242711 N=+=	~

Establish Relationships for Model

Before we can consume the data for our reporting, it is crucial to establish proper relationships among tables loaded from different sources.

1. Select the **Model** view



2. Resize all tables so that can see every fields. Arrange them and we will create relationships as following:



3. The following will be details for each relationship:





4. There might be other "Inferred" relationships. The entire model should have exactly 8 relationships. Remove any extra relationships.

- 5. Make sure that the **Cardinality** and **Direction** of relationships are correctly configured. Any mistake can simply right click on the relationship to fix it.
- 6. Congratulation! Now you have a solid model to the reporting.

Prepare Reports

Once the Data Model is created, the next step is to prepare report for **Data Visualization**, so that users can get useful information for decision making. In this section we will try to learn the following:

- What is the impact of Relationship Direction?
- How to using Map Visuals to present geographical related information?
- How to add more external Visuals?
- How to Drill Down the Hierarchical data?
- How to Drill Through from one report page to other page?
- What is Matrix?
- What are the different Filtering Scopes?
- How to create Virtual Columns at the reporting level?
- How to create and use Measures?

What is the impact of Relationship Direction?

Steps:

- 1. Create a new Report Page with name "Use Direction".
- 2. Add the first table visual element with the following property settings:



3. The result of the visual element is as below:

	Total	3
	Sales	2
	Research & Development	1
	Information Technology	2
	Human Resource	1
詣	Finance	3
	Department Name	Type of Races
	Sack to report	

What is this means?

4. Add a second table visual element on the same page with the following property settings:



5. The result of the visual element is as below:

Ħ		
	Race Name	No of Departments
唱		1
	Chinese	3
	Indian	1
	Malay	5
	Total	7
What	is this means?)

6. Take notes that the tables involved do not have direct relationship in our data model:



7. Currently the direction used are "Both". Try to change any one of those "Both" directions to single, and go back to report page to observe the changes.

	1 TblRace ···	
₿.	Delete	
	Properties	
Cross filte	r direction	
▼ Both		
Single		
Both		Singl
		- Singi

8. What is the conclusion?

Notes: The default direction of earlier version of Power BI is "Both". But this default cause performance issue. Newer version of Power BI changed the default to "Single" that provides better performance, but this can cause some side effects.

How to using Map Visuals to present geographical related information? Steps:

- 1. Make sure that you have connection to Internet. This needed to connect to Bing Map Server.
- 2. Create a new Report Page with name "Map Exercises".
- 3. Insert a new Fill Map visual element to the page:

	>	Visualizations	
	 	Filled map	
4.	In the	property setting:	
	□	-	~
		<u> </u>	'State'[Name]
		Location	
		Name 🔨 🗙	'State'[Name]
		Legend	
		Name	
		Latitude	
		Add data fields here	
		Longitude	
5.	In the	e Filters:	
		∇ Filters \diamond >	Vis
	h ▶.	✓ Search	
		Filters on this visual	'Country'[Name]
		Name	<u>.</u>
		Hume	
		is Malaysia	



6. Expand the visual element, the result should as below:

- 7. Try to Pan and Zoom the map.
- 8. Minimize the Fill Map element and click elsewhere to unselect it.
- 9. Add another new Fill Map at the right of previous Fill Map.
- 10. While the second Fill Map is selected, set the properties:

	'State'[Name]
Location	
Name	'State'[Name]
Legend	
Name 🗸 🔨	
Latitude	
Add data fields here	
Longitude	
Add data fields here	Sum of 'Unit Sold by States'[Unit Sold]
Tooltips	
Unit Sold VX	

11. In the Filter setting:



12. Expand the Fill Map:



- 13. Move the mouse cursor to each highlighted state and stay there for a while, what you can see?
- 14. Minimized the Fill Map. Select elsewhere to unselect it.
- 15. Add a new Map (Not Fill Map) element just below the first Fill Map element:



16. While the 3rd visual element is selected, set the properties:



17. Expend the Map element:



- 18. What do you think about this type of map to show the states of country?
- 19. Minimize the map, and unselect elsewhere to unselect it.
- 20. Add new Fill Map as visual element #4 for this page, and place it just at the right of the 3rd element. While this newly created Fill Map is selected, set its properties:



21. Expand the map and zoom to Malaysia:



- 22. Move the mouse cursor to Penang or Selangor, and stay there for a while. What you can see? Also take note of the Legend.
- 23. Minimize the map.

How to add more external Visuals?

Steps:

- 1. You need to have a Power BI account in order to run this part of exercise. If you don't have one, consult the trainer.
- 2. Create a new Report Page with name "External Visuals".
- 3. Power BI provides many types of visual elements. But sometimes you need other types of visual elements, you can load external visual elements it in to the project.
- 4. Go to Visualization, select the ... then select "Get more visuals":



This will bring you to App Source once you logged in with the account. 5. Key in "Radar" in the search box and press "Enter" to start the search:



6. You should get the search results a below:



7. Add all 3 of these Radar Charts elements:

🙊 🛕 🔕 ———	Newl y added elements are here
Values	

8. Try add a new radar chart:



9. Set the properties:

Category	'Measurement' [Measurement]
Measurement $\checkmark \times$	
Y Axis	
Actual 🗸	Sum of 'Measurement'[Actual]
Expect 🗸 🗙	Sum of (Mossuromont/[Export]

10. Expand the element and study it

11. Minimize the element, click elsewhere to unselect it. Add another Radar/Polar chart:



13. Expand the element and study it

What are the different Filtering Scopes?

Steps:

- 1. Create a new Report Page with name "Filters".
- 2. Add a new Table element and set its properties:

Values		'ThlEmployee'[FID]	
EID	∼ ×		
Name	V X	'TblEmployee'[Name]	
Gender	~ ×	'TblGender'[Value]	

3. Pay attention that all these fields in used will automatically as filter at the visual element level as well. You can't remove these types of filters. However, you can choose not to apply them:

Filters on this visual	
EID is (All)	
Gender is (All)	
Name is (All)	

4. Now, try to drag the "Department Name" from TblDepartment as new filter to this element:

∇ Filters \circ >	Visualizations >	Fields >
		✓ Search
Filters on this visual		∼ 🎛 Country
Department Name $ \lor \times \exists$	Q 💆 🗠 🖾 🖻	🗸 🌐 Measurement
is (All)	🔄 🖽 🖩 R Py 🖻	🗸 🏢 🛛 Jes Person Perf
EID		🗸 🎹 State
is (All)	🎓 🔦 🔘	
Gender		Departmen
is (All)	Valuer	DID
Name	values	HID
is (All)	EID VX	No of Empl

What is the different of this newly added filter if compare to the previous 3?

5. Unselect this table element. Add a new Stacked bar chart:



6. Set the properties for this newly added chart:

T @	
Axis	'TblDepartment'[Department Name]
Department Name $\checkmark \times$	
Legend	'TblGender'[Value]
Value $\checkmark \times$	
Values	Count of 'TblEmployee'[EID]
Count of EID VX	
Tooltips	

7. Enlarge the chart, you should get the following:



- 8. After study the chart result, minimize it.
- 9. Now, drag in field "Value" from TblGender in to the page filter and apply filter for "Female":

√ Filters	6	>	
✓ Search			_
Filters on this	oage		
Value	\sim ×	a	
is (All)	'TblGender'[Value]]
Add da	ta fialde hara		What happened now?

10. Guess what the report filter for?

How to Drill Down the Hierarchical data?

Steps:

4. 5.

- 1. Create a new Report Page with name "Sales Result".
- 2. Add a new Stack Bar Chart element to the page and set its properties:



3. Scroll down the property list until you will find the "Drill Through" section. Drag the 'State' [Name] in:

	Drill throu	gh				
\dd data fields here	Cross-report					
	Off O-					
n this page	Keep all filters					
dd data fields here،	Off O-					
	Name	~ ×	i i			
asures 'State'[Name]	ic (All)		(
Expand the Chart, try to	o study the info p	orovided.				
You will realize that this	s Chart now has s	special bu	uttons:			
Sack to report	BY NAME AND NAME			\uparrow	$\downarrow \downarrow \downarrow \downarrow$	Υ
Name ●Ah Chong ●Fatimah ●Sh	ila Hamzah					

6. Click the down arrow:



- 7. Click the Malaysia Bar on chart. What will happened?
- 8. Try to find out what other special buttons for?
- 9. Why this chart is given this special buttons?

How to Drill Through from one report page to other page?

1. Now select the previously created "Map exercises" page. In Map #2, right-click "Selangor":



Select "Drill through", then "Sales Result". What you will get?

2. You should be redirected to the "Sales Result" page with the filter State=Selangor:



What is Matrix?

Steps:

- 1. Create a new Report Page with name "Matrix".
- 2. Add a new Matrix element to the page:



3. Set the properties:

Rows	'Country'[Name]
Country ~ × Name ~ ×	'State'[Name]
Columns	'Sales Person Performance'[Year]
Year $\checkmark \times$	
Values	
Amount VX	Sum of 'Sales Person Performance' [Amount]

4. The element should look like this:



5. So, what is the different between Matrix and Table element?

How to create Virtual Columns at the reporting level?

Steps:

- 1. Create a new Report Page with name "Virtual Columns".
- 2. Right click the TblEmployee to add new Column:



8. The table should look like this:

	< Back to re	eport	
	Name	EPF	EPF2
唱	Aaron	1265	\$1,265.00
	Abu	1228.2	\$1,228.20
	Ah Chong	1288	\$1,288.00
	Ahmad	1495	\$1,495.00
	Ali	1128	\$1,128.00
	Azizi	1329.4	\$1,329.40
	Fatimah	1229 35	\$1 229 35

9. Add another table to the page just below the previous one. Set properties:



How to create and use Measures?

Steps:

- 1. Create a new Report Page with name "Measures".
- 2. Right click the TblEmployee to add "New measure":



3. Add TotalBasicSalary measure:



7. Add a new Pie Chart to the right of the Card:

	Visualizations	
	□ □	
8.	Set the properties: Legend	
	Value VX	'TblGender'[Value]
	Details	
	Add data fields here	
	Values	
	TotalBasicSalary $\checkmark \times$	'TblEmployee' [TotalBasicSalary]
	Tooltips	

9. Add a new Stacked column chart below the Card:



10. Set the properties:

<u> </u>	
Axis	
Department Name $\checkmark imes$	'TblDepartment'[Department Name]
Legend	
Add data fields here	
Values	
TotalBasicSalary $\checkmark imes$	'TblEmployee' [TotalBasicSalary]
Tooltips	



11. The report page is as below:

Notes: You can think that Measure is a stored expression. The evaluation is based on the **Context** it is applied. The above example:

- a) Card The context is entire company
- b) Pie Chart The context is gender group
- c) Stack Chart The context is per Department