

How to Install Power - BI

Google chrome



Type : → power bi



http://powerbi.microsoft.com



Power BI



See download or language
options



Language : english



download



Power BI desktop setup-x64.exe



Next



After download open the setup



language :- English



Next



Next



Accept the agreement



Next



Install



Finish

Introduction

Power BI - Journey

Data

- (1) Query data
- (2) Combine
- (3) Transform
- (4) Remove / Add
- (5) Update

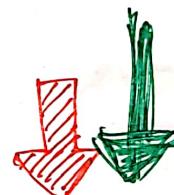
1. Power Query



Analyze

- (1) Link - Tables
- (2) Calculate things
- (3) Set up filters
- (4) Data science

2. Power Pivot



Share

- (1) Web / APP
- (2) Insights
- (3) AI / ML
- (4) Integrations

4. Power BI Online



Visualize

- (1) Charts , Tables
- (2) Interactions
- (3) Scaling
- (4) Animations
- (5) Explanations

3. Power BI

Open your Power-BI

Working with Power BI-Screen

Screen divided into 4 main areas:

(1) Big ribbon on the top

→ this lists all the key functionalities of the application

→ the ribbon itself is further divided into 4-5 different ribbons

→ Additional ribbon will come & go depending on what you are doing at any specific time

(2) Dotted line area in the middle ⇒ Canvas Area or Visual Area

→ Area where you build your reports or your data analysis

- (3) Couple of columns
- Fields Panel
 - Visualization Panel
 - Filters

in the right most

These columns can be collapsed or expanded on the right hand side

(4) Left Hand Side :-

Tiny bar to switch b/w different views

Using this Excel #
workbook

↓
Data Present

in

Blank Data



Practice - 3

Loading Data into Power-BI

→ Get data button is placed at multiple options:

(i) Field Panel

(ii) Button options from canvas Area

(iii) Home ribbon:

↓
Data

→ we can load any of the myriad types of data sets

- excel workbook
- power BI datasets
- SQL server
- web

so on

Go to Home ribbon

↓
Data: Get Data



Excel workbook



locate & select your
excel file in dialogue box



Open



A Navigator screen will be shown

→ gives option to pick your
data that you want to
work with in our excel.



select your Table (may choose
multiple if req.)



Load

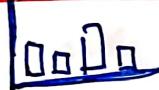


Now, your selected data-table
is loaded in your Power BI

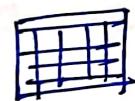
Now, we can see all the tables available for us in the right hand side in Field Panel

click on the table in "Field Panel" to see all its columns/field in it

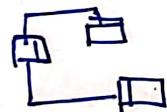
Go to different Views in Power BI



⇒ Visual view (Power BI)



⇒ Report view [can see any table we loaded in our power BI now]



⇒ Model view

(relationship b/w multiple table can be seen here)

Setting up the Data Model in Power BI.

- # Open "Model View" from left Hand side - Tiny bar
- # we can see multiple Table are connected to each other
- # if we click on the line joining two table , we can see the column on which basis they are joined together .
- # Default behaviour within Power BI is if the column name match then power BI will try to connect them , but if the column name do not match then power bi wouldn't connect them .

But in case their column name
are different and we know that
they mean the same,
then;

click on that column from ^{1st} table
and drag it to other column of
table by which it's matching up.
and then a relationship will
be established.

 : it indicates the direction
of the filters

(which way Power Pivot filters the
data for calculations)

1. Data Cleanup

* Data

Present

in

Blank Data

Practice: 3

⇒ files are saved

with

• PBIX

Making our 1st visual in Power B.I

Geographic Sales Visual

- # Insert a column chart  from "visualization Panel"

↓
column chart will be inserted
in canvas Area

↓
we can move it or resize it

- # Go to "Fields Panel"

↓
location : Creo

↓
put it on "Axis" on visual
panel

(Creo. will be on Axis)

↓
it will right now show blank
only when we add a value

then only things will show up



so, now add the value



Sales Table : Amount



Place : values

Note :-

* sometimes we'll see a blank geography



This blank geography is coming from



due to inconsistent spacing in

geography column of our table

i.e., blank spaces in the beginning

Geography
India
USA
New Zealand
USA
Canada

⇒ for example

(i) we can change the data in original excel workbook & clean it up & then Power BI will get the correct data & then it will be able to map the relationships and the blank will no longer appear.

(ii) we can clean the data at the Power BI level

Cleaning the data at Power BI Level

(i) From Home ribbon
↓
Transform Data
↓
it will open a separate screen of worksheet (Power Query)

Power Query :- It is the data processing engine of power BI

→ Using "Power Query"; we can tell Power BI how we would like our data to be processed, like our data cleaned or reshaped

you can see inconsistent spacing in Geography Column

We'll Trim (Trimming)
To remove extra spaces in the begining or at the end

Right click on Geography Column

Transform



Trim



now, extra spaces will be removed

Note:- By editing in Power Query,
our data in excel workbook
won't change.

⇒ it is just applied in Power B.I
⇒ Power Query will "Repeat" the steps
when you "Refresh"
i.e., rule is applied automatic
even if new data is entered
in our main excel workbook.



close & Apply

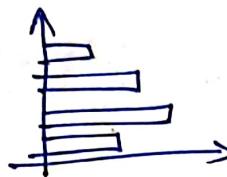


Now, in our Power B.I visual,
the things will automatically gets
changed.

Amount by Individual Sales

or Teams

choose bar chart



from "Visualisation Panel".



(i) Put : Sales Person
(field panel)

in Axis



Put : Amount in values

or

(ii)

~~✓~~ Put : Teams in Axis

Put : Amount in values



we will again see a blank bar i.e., data cleanup issues arises.



Blank bar: \Rightarrow People not having any teams

Note :- if we click on any bar in 1 chart then corresponding chart will get reflected accordingly.

[∴ Power BI is very interactive]

New :

Select blank bar



Add a Table :

1	2	3



Put sales Person in values

Put

The people appearing in the table corresponds to those who doesn't have any teams

Every visual in Power BI is interactive

⇒ if you click on one visual
an item on that then all
other visuals instantly respond
and highlight or filter the values
that corresponds to what you
picked. ↓
dynamic report set up

Now, to remove Blank

Go to Data view (left-middle icon)
↓
people Table
↓
Team : certain people don't have
team name instead the
box is empty

Now :

Go to Home :

↓
Transform Data
↓



click : People Table



notice : blank space appears
as null



right click on Teams



Replace values



A Dialogue Box Appears



value To find : null

special | others

replace with :



will be updated

A Rule



close & Apply



in our visual , it will be
updated .

9. Data Analysis

with

Power

B. I.

Surveillance

Then : brief of entry
errors/message : view & update

Intelligence : view - alert A

Wiggles & alerts

See Minimum

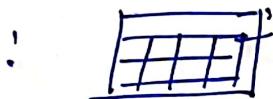
Analyzing Sales Person Performance

Add New Page

- To add a new page , click on "+" at the bottom and you can add a page .
- By default these pages will be named as : Page 1 , Page 2 .. .
- we can change page name by double clicking on them

Using Table Visuals for overview of Everybody

click on table from visual Panel



↓
Put : sales person in values

~~Defining Calculation logic by~~
~~Adding Measures~~

Right Click : Sales Table (field Panel)

↓
New Measure

Power BI will open a formula bar for you to define the measure.

The language that we use to create these measures is called - "DAX"

"Data Analysis expression"

Creating measure:

[X] [] 1. Total Amount = sum(sales[Amount])

click here → after writing measure to apply it

↓
You'll see that Total Amount in sales table (field panel)

Measures are denoted with a special calculator symbol on the screen

Note:- A measure not only has logic definition but it also has a visual def".

↓
we can use measure tool ribbon to set the formatting

⇒ Measures are dynamically calculated & shown whenever we use it on the visuals within power bi

Adding filters/slicers to the Report

click on slice : 

↓
Put : Team in field
(visual panel)

→ double click on any team to apply for all the team.

Formatting your BI Visuals - Power

- Select the table in canvas area



Visualization Panel : Format visual



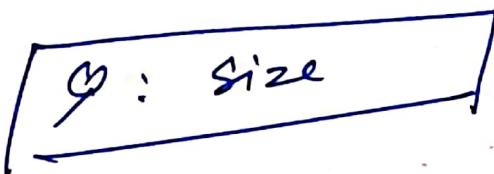
From here we can set formatting to each & every things.

i.e.,

values : font size

↓ Various options are available
use them as per your creativity.

We can also search the
formatting u want to do.

eg:  g: size

More DAX Measure

How to add Measures

Go to Field Panel



right click on table



New measure

(10) Total Box

Total Boxes = sum(sales[Boxes])

- ✓ format: whole Number
- ✓ thousand separator

* To sort it, click on the heading
on the table

(2) Amount Per Box

$$\text{Amount Per Box} = [\text{Total Amount}] / [\text{Total Boxes}]$$

Note :-

- # when we are referring to another measure in the workbook, we simply use it directly without specifying the table name
- # when we refers to any column in the table we must specify the table name & column name

Conditionals Formatting Visuals

Databars

- select the table in your canvas area



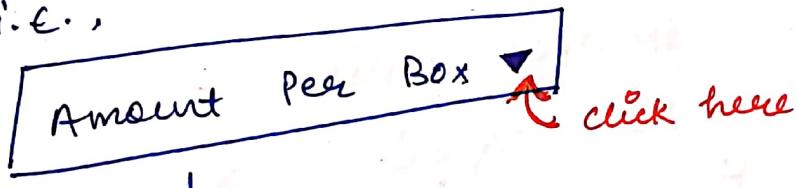
value : (visual Panel)



~~regular click or context Open Box~~

click on arrow

i.e.,



conditional Formatting

↓
data bars



click : OK

⇒ By default it will take data-bars.

Again,

Amount Per box 

click here



conditional formatting



data bars



change the colour



maximum: custom

enter any value higher
than that in box

e.g: (25)



it will assume whole
cell length = 25

and based on it, it will
scale the things.

Now, Go to Table View (left corner)



People Table



Picture : of our employee

Note,

Insert Picture from People to
our table in canvas area.



By default the picture will
show as the URL



To get Actual Picture

Go to Table View



Open : People Table



Select Picture Column



Column Tools : Ribbon



Data Category : - Image Url



Now go back to canvas area



You'll see Picture instead of
url.

we can also adjust size
of picture (height of picture)



visual Panel



Edit



height



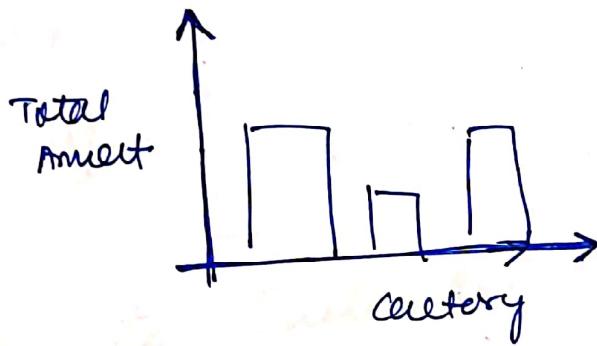
Image ht.

Add a column chart

Total Amount Category Graph

Put : Category from Product
on Axis

Put : Total amount in values



Now:

Put any individual , the respective
value for that will get
reflected in all visuals in our
power b.i.

Note:-

The problem with this approach
is it is showing me the
proportion of that person

as against her entire team
what I instead want to see
is when I click on any
person, I want Amount - Category
to reflect just that person's data
alone.



How to Customize Visual Interactions

- select your table (canvas mode)
 - Format : Ribbon
 - click : Edit Interaction

[this table can interact with slices + graph]

Power BI will show some additional icons on top of the graph

Power BI Interaction Types

① highlight 

② Filter 

③ no interaction 



select filter icons



Uncheck : Edit Interactions

so icons go away.

Amount by Geography Graph

ctrl + c : the other graph present



ctrl + v : that graph will be copied again

↓
Resize



Just change Axis to Geography

Adding Titles & Logos to Your Report

To Add Title :

Home : Ribbon



Text Box



Move & Resize your text box
as per Requirements



Type text

To Add logo

Insert : Ribbon



Images

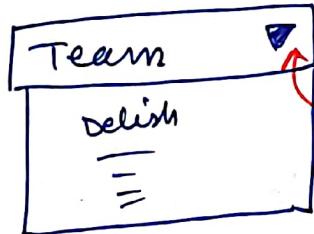


Select your image



Resize & Adjust it

Slicer customization



click here



List or dropdown

Rename A chart | graph

Select that chart | graph -



visual Panel



edit



general



Title



Text

(From here, we can do formating too)

3. TREND

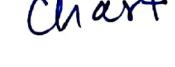
AND
FORECAST

ANALYSIS

To do trend & forecast analysis,
we need some sort of data
that has time/date component

Here, we have "sales data" \Rightarrow date
&
Amount

Trend of Customers

Insert  or  chart



↓
Axis : Date

* Add measure to sales table

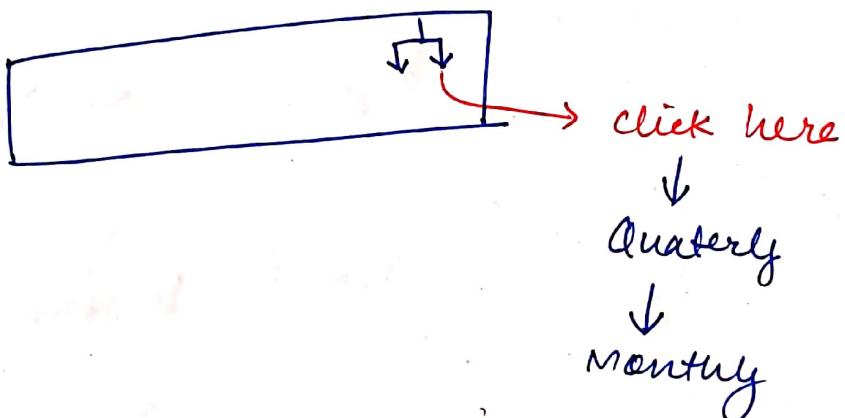
$$\text{Total Customers} = \text{sum}(\text{sales [customers]})$$

↓
Values : Total Customer



↓
we'll only see single dot instead
of a line
(showing data at higher level)

To see data at lower level:



Now:

Add : category in legend section

↓
split into 3 different line
one per category

Fore-Casting in Power BI

In order to do forecast, we need to have one series on the chart not 3 different ones.

- Select the graph

↓
visual Panel

🔍 Analytics on top



enable Forecast



Forecast

👉 click here

Unit
→ length
→ Accuracy

Apply

4.

SAVE

PUBLISH

L
refresh

REFRESH

new
V

get me what I

↓

nearest station H

↓

and say nearest

view
stop
at

SHARING

- We need to have online AC with Power B.I.

Home : Ribbon



Publish



Select where u want

Save



Our Report will now be published
to online space



We can view them on
cloud platform



We can even edit here.

Published View of the Report

share your Power BI Report
from online cloud platform



In this case, I can go to different pages & see interactions of all visuals but cannot edit

Two tier Approach to Data

Creator Level :- Make & Change Everything

Consumer Level :- Read & Review things

Data Update & Refresh

- Insert some extra data in our excel workbook



Ctrl + S



Go to Power BI



Home : Ribbon



Click : Refresh



Data will be updated & all
calculation will also be updated

To Update Online view Report ,
click : Publish

↓
Save



Replace → online will be updated

To see updated values in

online report



just Refresh it
(window)

1) Power Query

for data connections & transformations

2) Power Pivot & DAX

for calculations, modelling

3) Visuals

for charts, reports, story-telling

Excel

Work Book

- 2

Loading Employee Data set in Power B.I.

[excel practise blank :- 2]

Open Power BI



Home : Ribbon



Get Data  click here

↓
Excel



Connect



select your excel workbook



open



A. navigator screen opens up



↓
navigator screen asks :

what do you want out of
this file , bcz the file has two
things :-

- (i) spreadsheet
- (ii) Table

↓
enable Table

↓
load

↓
After loading , we'll get Table
called Table 1 in field Panel
and all its column will be
listed

View of Power BI

- * Ribbon on the top
- * visual / canvas area centre
- * Right :
 - filters
 - visual Panel
 - Field
- * Left :
 - visual
 - data view → data
 - model view → relationship
 - Box view for each table

No. of People By Department #
Insert a column chart ↑
17/17
from visual Panel
↓

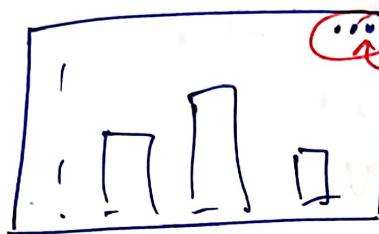
Add : Department on Axis

Add : Name on Values

* Note

:- Here the sorting order by default is based on size of columns or bars.

Note :-



click here

↓
sort Ascending
sort descending
sort By -

Gender distribution by Pie Chart

Insert a Pie Chart



Add : Gender to Legend

Add : Name to Values



You'll get some blank
also ↓

To remove/replace blanks



Go to data view (left corner)



Under Gender Column

: there are some missing values



Home ribbon : Edit Queries



Power Query Editor screen



Select Gender Column



Right click : Replace Values



Value to find : null



Replace with : other



Save



Click: Close & Apply

it will automatically be
updated in our visuals.

Adding Slicer

seeing our visuals wrt a specific
manager

Insert slicer

Add : Manager to Values

* Staff detail wrt Manager *

Insert : Table



Add : Name

Age

Rating

Salary

select this table
↓
visual Panel
↓
format
↓
Total : off

(To remove
total
columns)

conditional formatting to Rating

select the table in visuals
↓
values : Rating ▾
click here
↓
conditional count
↓
background
↓
apply color

Again :-

Salary 

click here



conditional formatting



Data bars



OK

* Loading Excel data to
Power BI *

Open Power BI



Home : Get Data click here



From Excel workbook



select your excel file



open



enable all the tables



Load

Transform
Data

directly load as
it as data

select it if
your data needs
clean up

Power Query

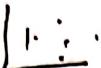
★ Power Query window :-

- manipulate the data
- change the data portion of your input
- combine multiple tables into one

Here, we'll load

Note:- if you are bringing multiple tables you need to perform an important step
↓
Data modeling
↓
To see how these tables are connected to each other
(relationship b/w them)

At the left corner of your screen

(i)  :> Visual / Canvas Area

(ii)  :> Table View

(iii)  :> Model view

Note,

Go to Model view



You can see 4 tables



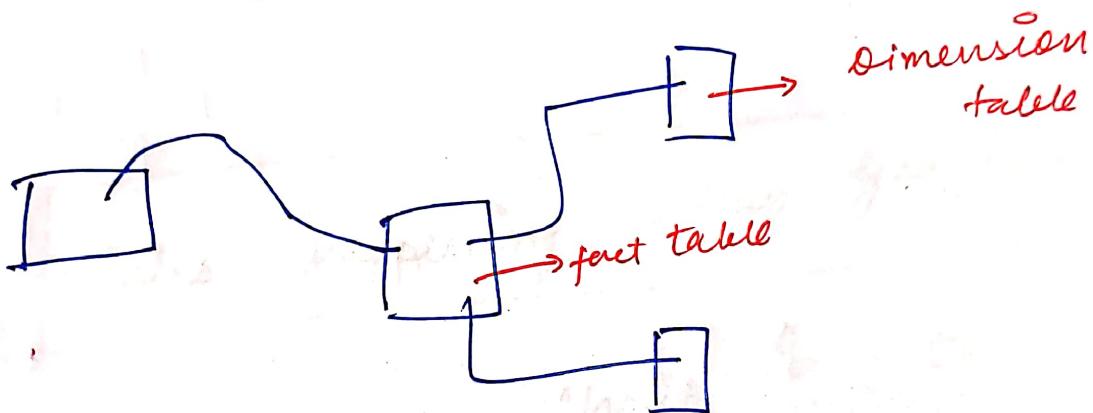
* By default, Power BI makes connection b/w 2 table based on same column name

* if some connections are missing,

make it by dragging column from 1 table to another column of another table

→ This will make connection b/w 2 tables on that basis of Column

* Star Schema Modelling *



1 Table is connected to other tables with + in the center

fact table \Rightarrow central table
 \rightarrow it contains all facts or numbers

dimension table \Rightarrow outer table
 \rightarrow they provide the information in a specific dimension

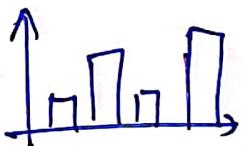
e.g.: People table \Rightarrow People Dimensions

↓
Go back to Visuals

↓
You'll see all 4 table in
"Field Panel"

Sales happening within geography

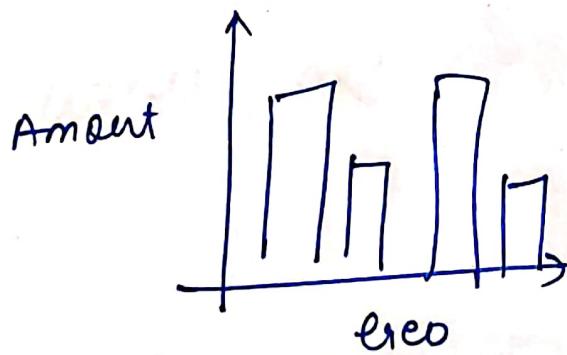
Insert column chart



Add: Geo to axis

Add: Amount to Values

(By dragging them)



Select the graph ↴

↓
Visual Panel

↓
Zoom at

↓
9 size

→ increase text size of
x-y label

Amount - Team Graph

To have same font size of prev. graph

↓
just copy the graph

↓
(ctrl + v)

↓
we'll get duplicate graph

↓

Remove : Geography on Axis

Add : Teams on Axis

- Note :- → everything is interactive
- By default the visuals are interactive
 - if you touch something, other visual will respond by automatically filtering down to the selected position, then highlight the filtered values.

Add Category as slice

Insert slice :- 

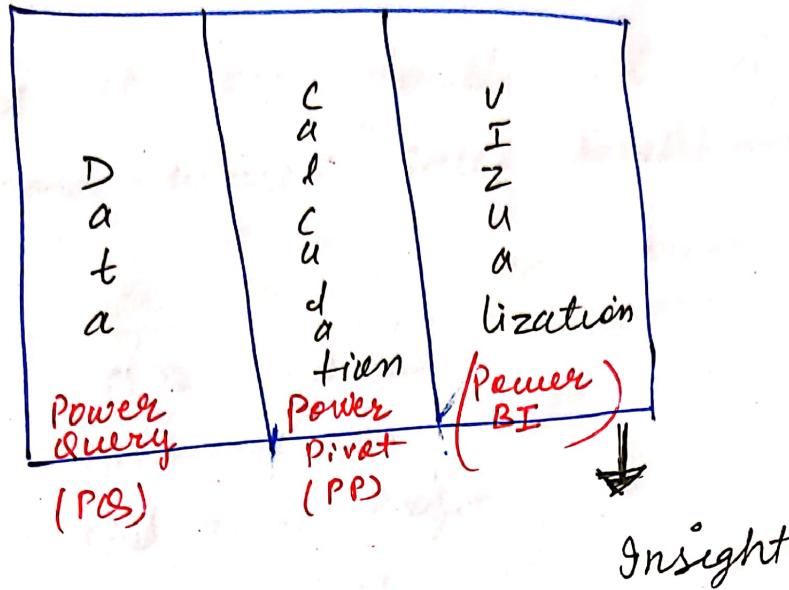
Add Category to fields

g.size

↓
increase the text size

Note:-

My
Data →
flows
through



- # To Unselect : Tap there once again
- # we can select any graph from canvas area and make it switch to other chart present on visual Panel by just clicking on it .
- # You can also format colour as suggested prev . just select graph ↓ visual panel : front so as per your choice

Now, add a new page and rename it by double clicking on it and write : "Sales Dashboard".

Here, we have to add measures

(i) Total Sales

(ii) Total Cost

(iii) Total Profit

(iv) Profit %

(v) Total Customers

(vi) Sales per Customer

Add Measures (DAX)

How to add measure

Go to Field Panel

↓

right click : sales table

↓
New Measure

↓

measures box appears on
the top of canvas

tiny little
calculator
symbol

next to
measure name

1. Total Amount = sum(sales [Amount])

Format : Ribbons

↓
set : currency, ,00 separator ...

Calculating Total Cost

{ Inserting cost column in our sales table } open data Table Tools View
Sales Table : click & open
Tables Tools : Ribbons
↓
New Column
↓
 1. Cost = [Boxes] * Related (products [cost per box])

Now, calculating our total Cost :=>
↓
Go to field panel

↓
Right click : Sales table

↓
new measure

↓
 1. Total Cost = sum (Sales [Cost])

↓
Format :> currency . . .

* Note:- we can insert measure in
any table →
the way we write the measure
they're fairly naked

↓
so it doesn't really matter
where the measure is present
it will still calculate the
same value.

* Add Another Measure :-

Total Profit = [Total Amount] - [Total Cost]
↓
set formatting

* Add Another Measure :-

Profit % = Divide ([Total Profit],
[Total Amount])
↓

format : → Percentage
(measure tools)

Note,

Insert a table in canvas area



Add : → Category

→ Total Amount

→ Total Cost

→ Total Profit

→ Profit %.



Increase the text size
[Visual : font : (size)]

Add a fictional profit indicator

→ if $\text{Profit \%} > 50 \rightarrow \text{thumbs up}$
else $\rightarrow \text{thumbs down}$

Add new measure



✓ Profit Target met? = if ($[\text{Profit \%}] > 0.5$,
"B", "E")

* To bring emoji



Press : Windows
Key + ○

Add New Page

as "DashBoard"



name it

Dash-Board



Insert a Card :>

(to show single No.)



Resiz it



Select : Total Amount by clicking
on it after selecting the
card (or) Put Total Amount
in field

Now, Apply formatting :

Select the card

↓
visual Panel

↓
Font

↓

i) Background colour → colour

ii) Data level :> font size,
bold

iii) Change colour of text

Once your card visual is ready

↓
(ctrl + C) & then (ctrl + V)

↓
move them ; Power BI will
show proper alignment

↓
copy it 4 times & arrange
one under another.

e.g:

- 1.
- 2.
- 3.
- 4.

* Add : → to field section

1. Total Amount
2. Total Cost
3. Total Profit
4. Profit %

Now, we can add 1 decimal point for
more accuracy.

Select & do individually for
all 4 card visuals.

select card



visual : Font



Data label



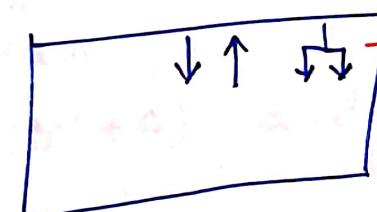
value decimal point

(20) Inserting Area chart for Card Visuals

Insert Area chart : 



Put : Date on "Axis"
Put : Total Amount on "Values"



Hierarchy button

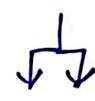
year

↓
quarterly

↓
monthly

⋮

By default it will show date
at year level & small dot is
shown in your Area chart

click :  (2 times)



we have : monthly breakdown
report



Resize it small and place
in front of its card visuals



do I formatting:



Turn off title of area chart

Now,

once your area chart is ready

then

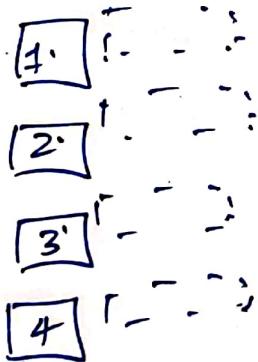
(ctrl + c) and then (ctrl + v)



move them & resize and make
or place in front of each 4 cards



Align it
properly



2. drop total Amount &
select Total Cost

3. drop total Amount &
select profit

4. drop Total Amount &
select Profit %.

{30} Insert a Table

Insert a Table (Visual Panel)



Add :> Sales Person

→ Picture

→ Total Profit

→ Profit %

→ Profit Target met?

Note:-

In Picture column, you'll see necessity

To place ↓ picture here

Go to Data View (left - mid)

↓
click : People table

↓
select : Picture column

↓
Column Tools : Ribbon

↓
Data category : Image URL

↓

This will now show the image
of the people in table present
in canvas Area

Adjust formatting to Table :

Select the table from canvas Area

↓
visual Panel

↓
Font

↓

- i) Total : Total off
- ii) Grid : Image height (set)
- iii) Resize Text size
- iv) Add colour & background to
headers & columns
- v) Apply sort order (desc.)

Add Team as Slicer

Insert Slicer :- 



Add: Team to "field"



Resize it & place it on
the top

(Ques)

Can you select more than one item &
move them all together?

sol) (i) hold (ctrl) key

↓
select the items (multiple)

↓
drag them (move them)

(ii) select all items

↓
right click

↓
group → as 1 object

They are still individual charts
but they come in 1 group

↓
And we can move them all
together freely. (at + go)

④ we can also do combine formatting
by selecting them, and doing
formatting.

New,

insert 1 more visual card
↓
Add customers
↓
select prev. card
↓
Home : Format Painter
↓
click on new wala card
↓
it will apply the same
formatting Rule

But, it won't match the size

{40} Formattings

Select table in canvas Area

(a)

↓
Select table

↓
visual panel

↓
Total Profit

↑ click here

↓
conditional formatting

↓
Data Bars

↓
set up colour as your needs

↓
OK

(b) make your Table small

↓
✓ Resize it as a whole

↓
✓ Resize the column (like regular table)

↓
we can reduce the size of
headings

e.g. \Rightarrow column \Rightarrow Profit Target met?

is too long

↓
Replace it by small name

↓
Select table

↓
Visual Panel

↓
visual fields bucket

↓
double click : Profit Target met?

↓
Type a small heading \Rightarrow "?"

Add Another New Table in
Same Page

Add Table :

↓

Add : \rightarrow Products

\rightarrow Total Amount

\rightarrow Profit Target met

Now,

Apply conditional format to total Amount

select table

↓
visual Panel

↓
Total amount

click here

Conditional format

↓
Background colour

↓
select your colour

↓
OK

Turn off the totals in the
table

Add Title to Page

Insert : Ribbon



click : Text BOX



Type : " YTD Sales Dashboard "



move it at the top



increase the text size +
make it Bold



Add Background Colour



select this text BOX

YTD Sales Dashboard



Format : Ribbon



Send Backward



click anywhere in canvas
area

Now:

Insert a Rectangle shape
: Insert :- Shapes



Place it on the top of
Visual Card & Area chart



Fill :- whitish grey colour



Add : Shadow Effect



Select rectangle Box



Format : Send Backward



Place this rectangle white box
with same format everywhere



Note :- Within Power BI all table
visuals have white background
by default



so, select them



Visual : Font



Disable : Background.

Note :-

Do editing & formating



See final Result for Reference .