

POWER BI Training Session #1



Let's Get Started

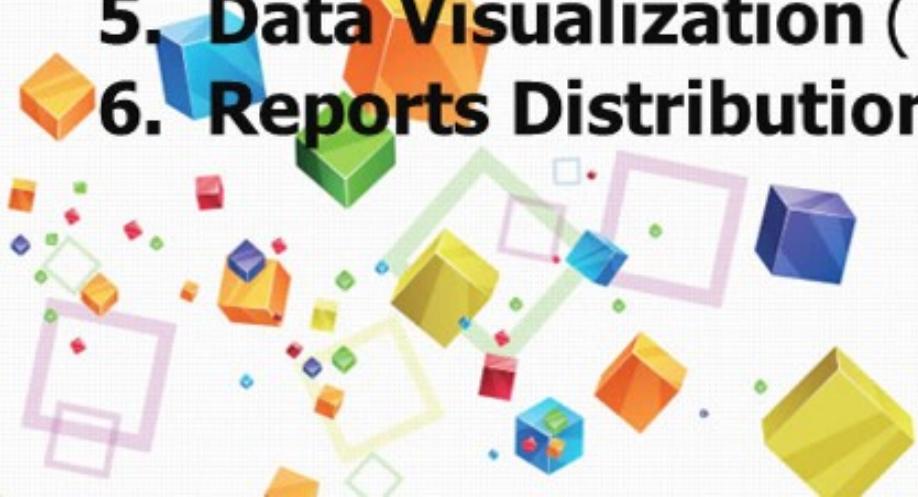
Let us Have A Quick Introduction

- Just Your Name, Total Experience
- Have You Worked on Microsoft Power BI Earlier?
- Expectation from this Course!



This is a Practical Hands on Workshop based course, to learn Data Analytics and Business Intelligence (BI) with Microsoft Power BI Desktop

- 1. Understanding Business Intelligence (BI) , Self Service BI , Data Analytics & Data Visualization**
- 2. Introduction to Microsoft Power BI**
- 3. Data Discovery (Connecting & Shaping Data with Power BI Desktop)**
- 4. Data Modelling (Creating Relationship, Star Schema , DAX)**
- 5. Data Visualization (Reports , Dashboard)**
- 6. Reports Distribution (Power BI Services)**



Business Intelligence (BI),
Self Service BI,
Data Analytics

§

Data visualization
Introduction



BUSINESS INTELLIGENCE

- Business Intelligence (BI) refers to **technologies, applications and practices** for the **collection, integration, analysis, and presentation** of business information
- The Purpose of Business Intelligence is to support **Better Business Decision Making** via **Data Analytics** .
- **Data analytics** is the process of examining data in order to find **valuable knowledge** and **actionable insights** from the Raw Data with the aid of specialized systems and software.

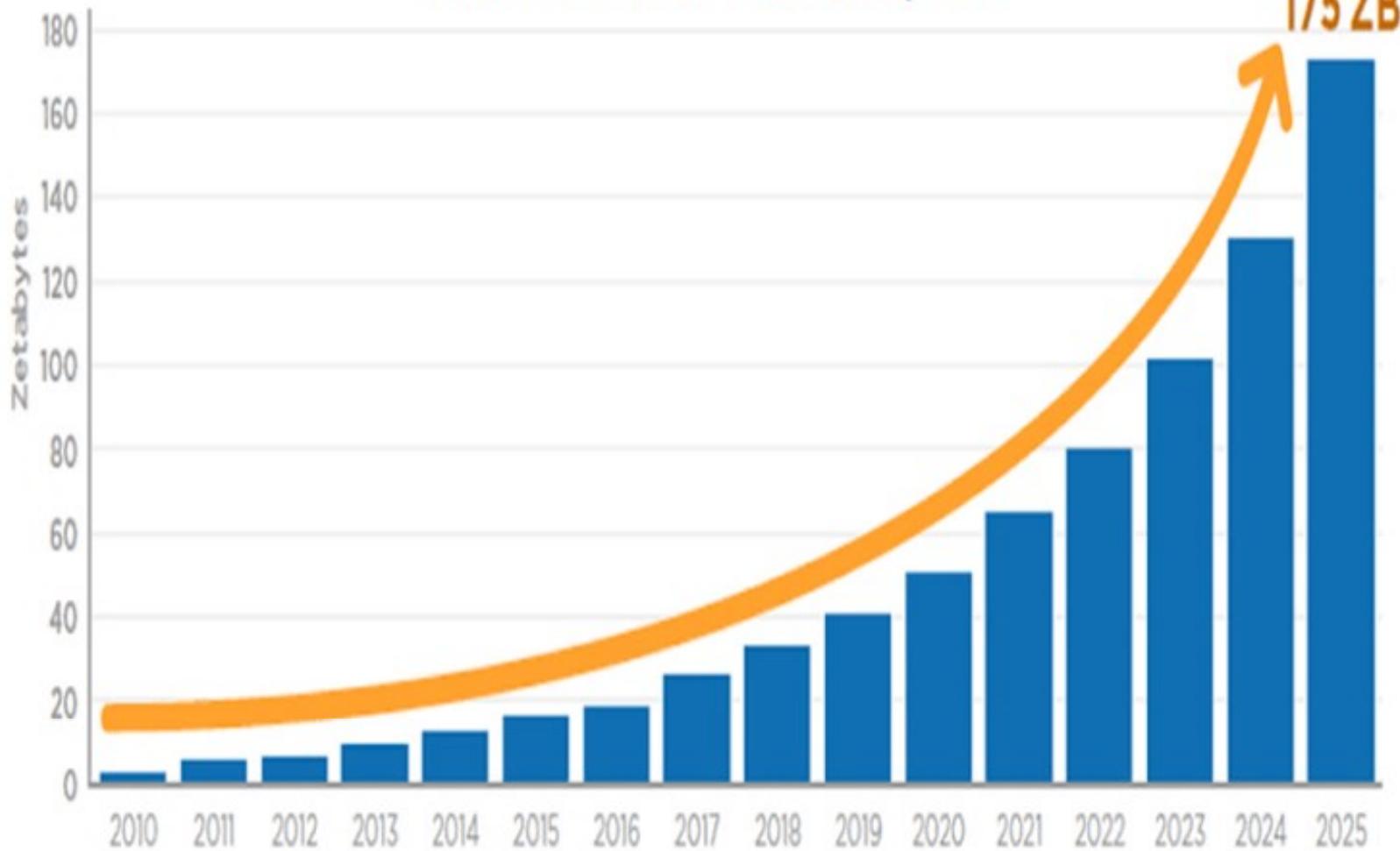


INTRODUCTION TO POWER BI

- In 2025 the world's data is expected to reach 175 ZB.
- Within these data are huge, unparalleled opportunities for human advancement. But to turn opportunities into reality, people need the power of data at their fingertips.
- Power BI is helping People Do Exactly This.



Annual Size of the Global Datasphere

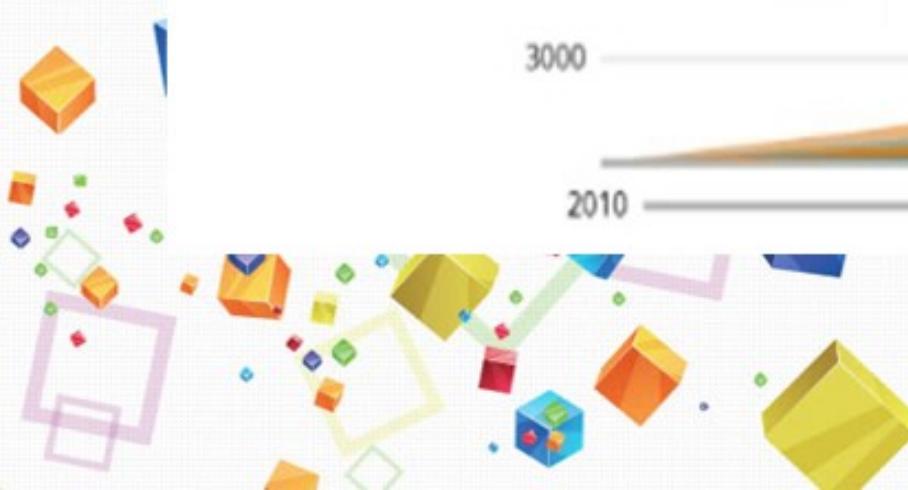


Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

WHERE IS DATA COMING FROM?

BIG IN GROWTH, TOO.

1 exabyte (EB) = 1,000,000,000,000,000 bytes



SELF SERVICE BI

- With self-service bi, business users are able to filter, segment, and analyze their data like never before, **without the in-depth technical knowledge** that most analytical systems have required in the past.
- **Identify Your Users** - Who are your “**casual users**,” such as employees and managers, and who are your “**power users**” like data analysts , data scientists and software developers.
- Casual users just want to pop in and pull some reports or view their KPI dashboard.
- The power users group – which is really just 10% of your users at best who have that training, who can program, programmatically access data **really do need self-service**.



WHY IS DATA ANALYTICS & SELF SERVICE BI IMPORTANT?

- In 2020 the world's data is expected to reach 45ZB.
- Within these data are huge, unparalleled opportunities for human advancement. But to turn opportunities into reality, people need the power of data at their fingertips.
- Microsoft PowerBI is helping People Do Exactly This.



How Big is Big?

1,000 gigabytes =
1 terabyte

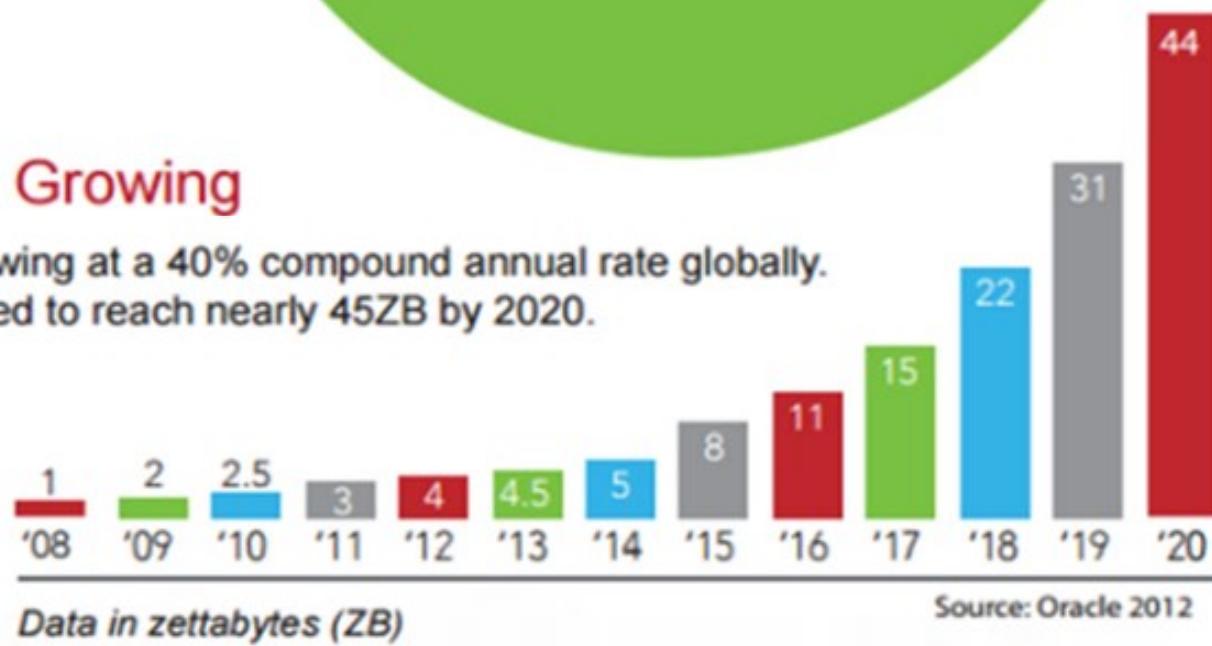
1 million terabytes =
1 exabyte

1 billion terabytes =
1 zettabyte



And It's Growing

Data is growing at a 40% compound annual rate globally.
It is expected to reach nearly 45ZB by 2020.



Business Tools



ORACLE
BUSINESS INTELLIGENCE

SAP
Business Objects™

Logi 
ANALYTICS

 **Microsoft**
Business Intelligence



QlikView

 ACTUATE.

 JASPERSOFT

 pentaho™
open source business intelligence™

 **MicroStrategy**
Best In Business Intelligence™

 tableau

 **intellifront**
BUSINESS INTELLIGENCE

What is Visual Analytics And Why ?

“Visual analytics is the representation and presentation of data that exploits our visual perception abilities in order to amplify cognition.”

- Andy Kirk, author of “Data Visualization: a successful design process”



Please Count The Total 9 in the below data set !

3	3	0	3	0	1	8	7	6	8	2	1	4	0	3	8	3	7	7	2	0	5	2	3	2	7	0	2	0
7	1	4	6	0	2	1	3	2	7	6	0	2	5	6	3	2	5	7	6	3	3	0	2	0	3	0	7	2
8	7	5	7	2	8	3	8	7	7	8	2	0	7	7	5	2	3	1	1	5	6	3	8	4	7	8	2	0
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2	4	3	1	3	5	4	9	5	0	7	6	0	7	4	3	1	8	2	7	3	4	6	0	2	4	8	2	3
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0	8	4	5	1	3	1	7	6	4	5	4	1	2	4	5	3	3	5	4	9	6	7	7	6	3	4	2	5
4	7	7	0	2	2	0	1	1	7	7	7	0	2	6	6	4	7	5	8	6	1	4	3	7	8	5	4	6
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0	5	2	4	1	5	3	3	1	5	5	1	4	0	1	6	4	3	3	9	8	8	3	4	6	8	4	8	6
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1	0	2	2	7	6	3	3	0	8	8	0	3	1	8	8	1	2	1	7	5	2	9	3	5	8	3	2	5

Please Count Now !

3	3	0	3	0	1	8	7	6	8	2	1	4	0	3	8	3	7	7	2	0	5	2	3	2	7	0	2	0
7	1	4	6	0	2	1	3	2	7	6	0	2	5	6	3	2	5	7	6	3	3	0	2	0	3	0	7	2
8	7	5	7	2	8	3	8	7	7	8	2	0	7	7	5	2	3	1	1	5	6	3	8	4	7	8	2	0
0	5	0	5	1	6	1	7	5	6	8	0	4	4	6	7	4	7	1	4	0	0	8	4	4	3	0	3	2
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8	6	2	2	6	5	4	6	7	0	7	6	0	0	3	9	0	2	4	7	1	7	2	3	3	5	8	7	0
0	8	4	5	1	3	1	7	6	4	5	4	1	2	4	5	3	3	5	4	9	6	7	7	6	3	4	2	5
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0	5	2	4	1	5	3	3	1	5	5	1	4	0	1	6	4	3	3	9	8	8	3	4	6	8	4	8	6
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1	0	2	2	7	6	3	3	0	8	8	0	3	1	8	8	1	2	1	7	5	2	9	3	5	8	3	2	5

Human Perception & Cognition

Humans Are Slow at Mental Math

$$\begin{array}{r} 24 \\ \times 86 \\ \hline \end{array}$$



Using Pen & Paper

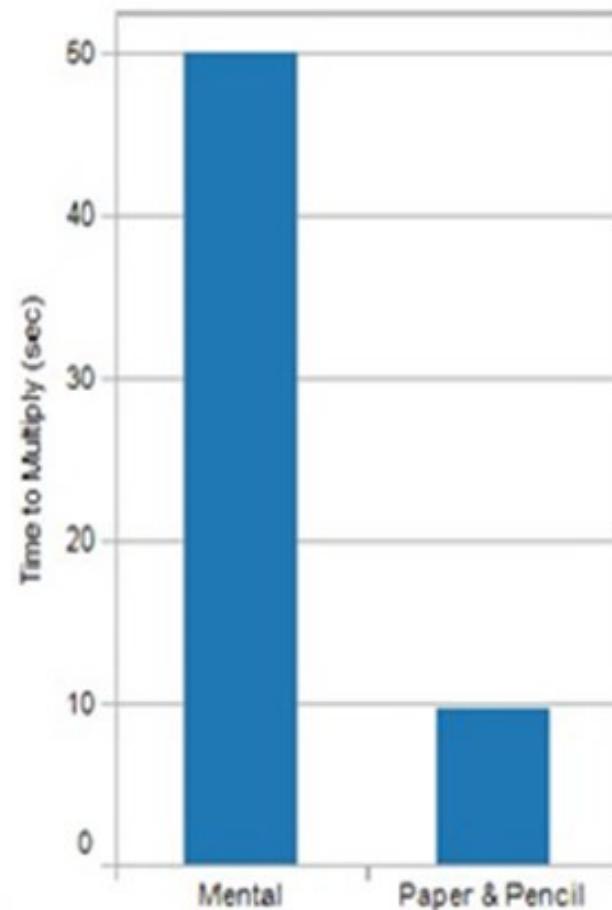
We're Faster When We Use the Pen

$$\begin{array}{r} 24 \\ \times 86 \\ \hline \end{array}$$

144

1920

2064



We're Much Faster When We Can "See" Data

Sales per Category/ Sub Category

Category	Sub-Category	Sales
Technology	Phones	330007.1
Furniture	Chairs	328449.1
Office Supplies	Storage	223843.6
Furniture	Tables	206965.5
Office Supplies	Binders	203412.7
Technology	Machines	189238.6
Technology	Accessories	167380.3
Technology	Copiers	149528.0
Furniture	Bookcases	114880.0
Office Supplies	Appliances	107532.2
Furniture	Furnishings	91705.2
Office Supplies	Paper	78479.2
Office Supplies	Supplies	46673.5
Office Supplies	Art	27118.8
Office Supplies	Envelopes	16476.4
Office Supplies	Labels	12486.3
Office Supplies	Fasteners	3024.3



We can make faster Business Decisions when we SEE the Analysis from different perspective

Sales Report for Superstore

Dates

1/3/2015 12/30/2018

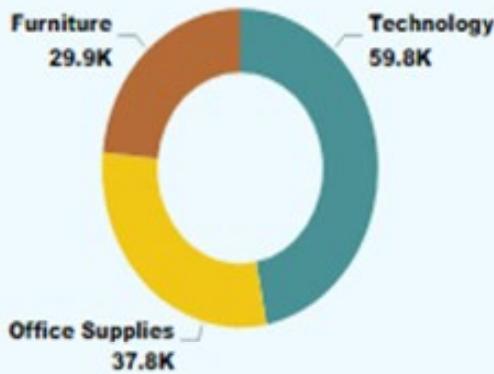
Region

East

Segment

Home Office

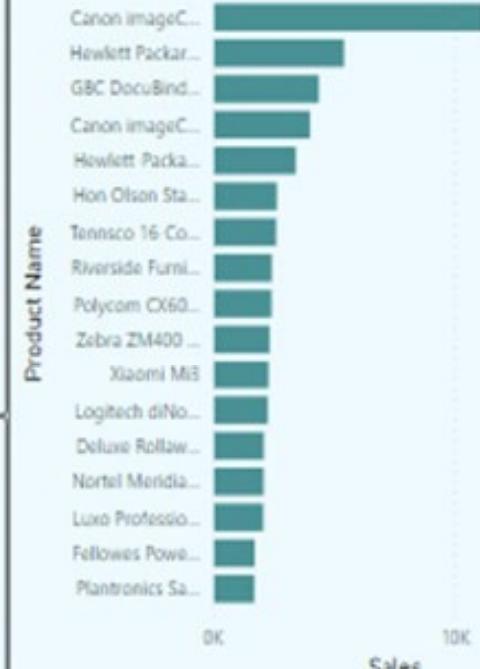
Sales by Category



Sales per Month



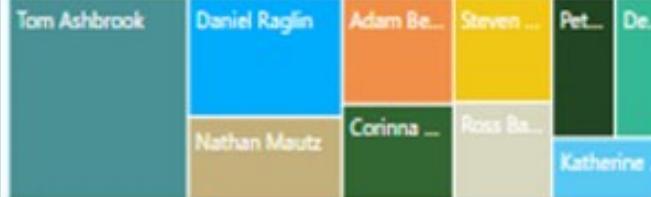
Sales by Product Name



127.5K
Sales

26.71K
Profit

Sales by Customer Name



Copiers 17

Supplies 15

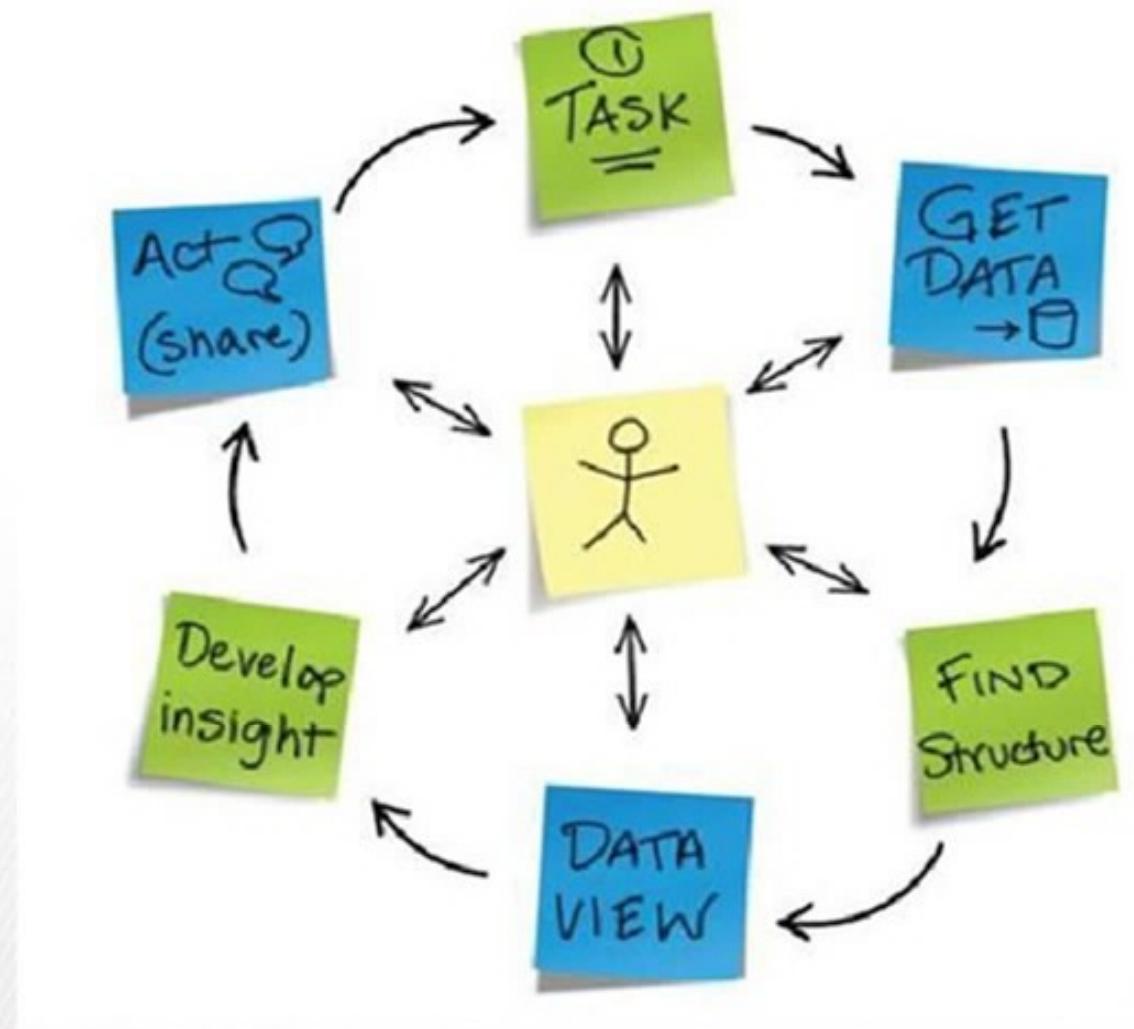
Paper 336

Binders 303

Furnishings 193

Phones 164

The Cycle of Visual Analysis



Visualization Best Practices

- Representing data for humans
- Color
- Maps
- Creating Reports / Dashboards



Introduction TO Microsoft Power BI



What is Microsoft Power BI

Power BI is a standalone Microsoft business intelligence product, which includes both desktop and web-based applications for loading, modeling, and visualizing data



PRODUCTS OFFERED BY MICROSOFT

POWER BI

Power BI consists of three main Products :

- 1. Power BI Desktop** -- powerbi.microsoft.com
- 2. Power BI Service** -- app.powerbi.com
- 3. Power BI Mobile** -- mobile apps for iOS,
Android, and Windows 10 mobile

These all work collectively to let you create,
interact with, share and consume your data how
you want it.



WHY POWER BI?

1. Connect, transform and analyze *millions* of rows of data

- Access data from virtually anywhere (database tables, flat files, cloud services, folders, etc), and create fully automated data shaping and loading (ETL) procedures

2. Build relational models to blend data from multiple sources

- Create table relationships to analyze performance across an entire data model

3. Define complex calculations using Data Analysis Expressions (DAX)

- Enhance datasets and enable advanced analytics with powerful DAX expressions

4. Visualize data with interactive reports & dashboards

- Build custom business intelligence tools with best-in-class visualization and dashboard features

5. Power BI is the industry leader among BI platforms

- Microsoft Power BI is intuitive, powerful and absolutely FREE to get started

Figure 1. Magic Quadrant for Analytics and Business Intelligence Platforms





Pricing

Flexible pricing to fit your budget

Indian Rupee (₹)

Author

Power BI Desktop

Free

[DOWNLOAD FREE >](#)

Share and collaborate

Power BI Pro

₹600.00

per user
per month

[TRY FREE >](#)

Scale large deployments

Power BI Premium

Capacity pricing

per node
per month

[PLAN YOUR COSTS >](#)



[Request demo](#)



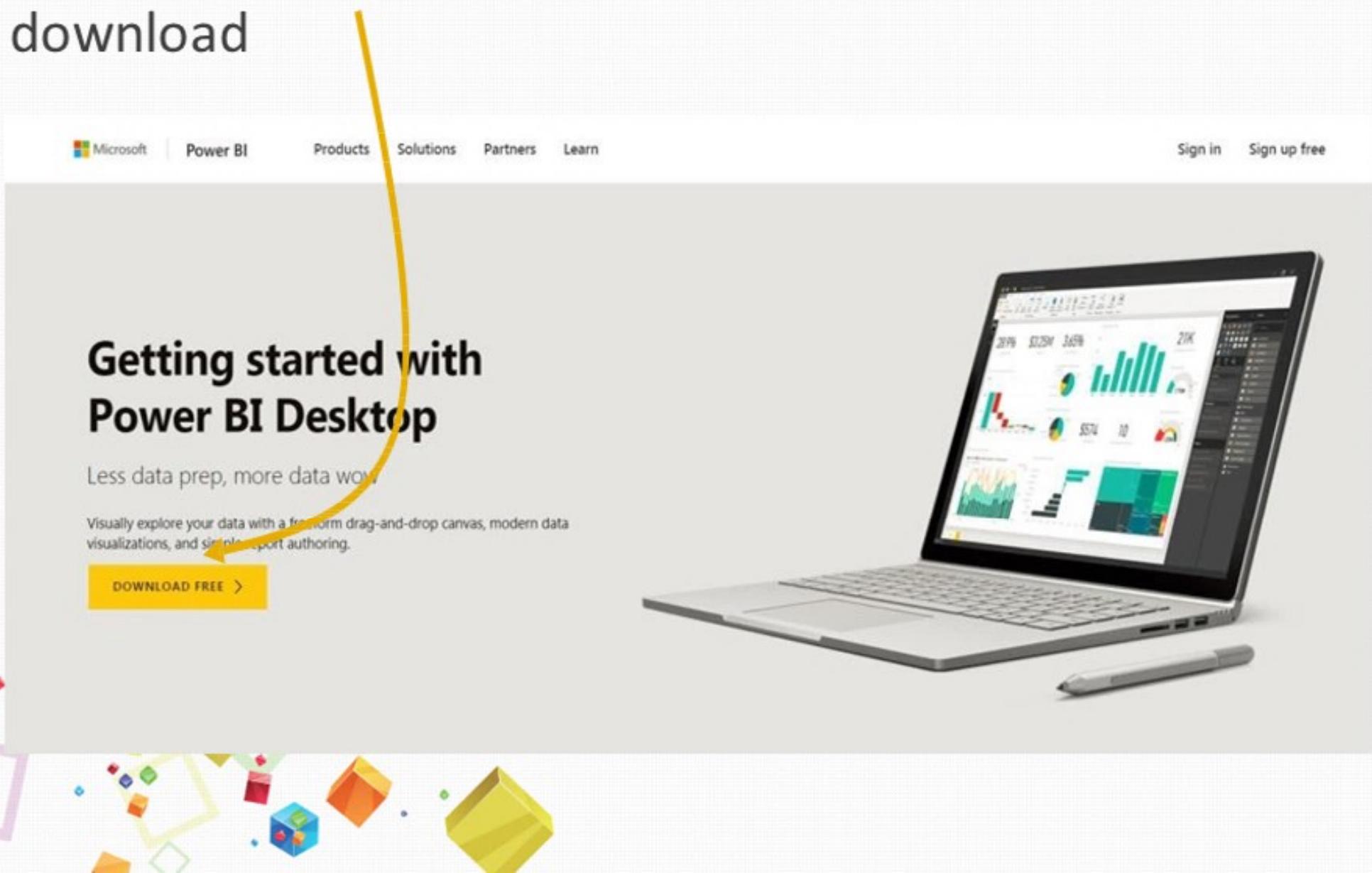
INSTALLING POWER BI DESKTOP

1. Head to powerbi.microsoft.com and click “Sign Up Free”

The screenshot shows the Microsoft Power BI website homepage. At the top, there is a navigation bar with links for Microsoft, Power BI, Products, Solutions, Partners, Learn, Sign in, and Sign up free. A yellow arrow points from the "Sign up free" link towards the "START FREE" button. The main section features a large yellow banner with the text "Business intelligence like never before". Below the banner, a subtext reads: "Go from data to insights in minutes. Any data, any way, anywhere. And all in one view." A "START FREE" button is centered below this text. In the foreground, there are three devices (a desktop monitor, a laptop, and a smartphone) each displaying a Power BI dashboard with various charts and metrics. The desktop monitor has a prominent yellow arrow pointing towards its screen.

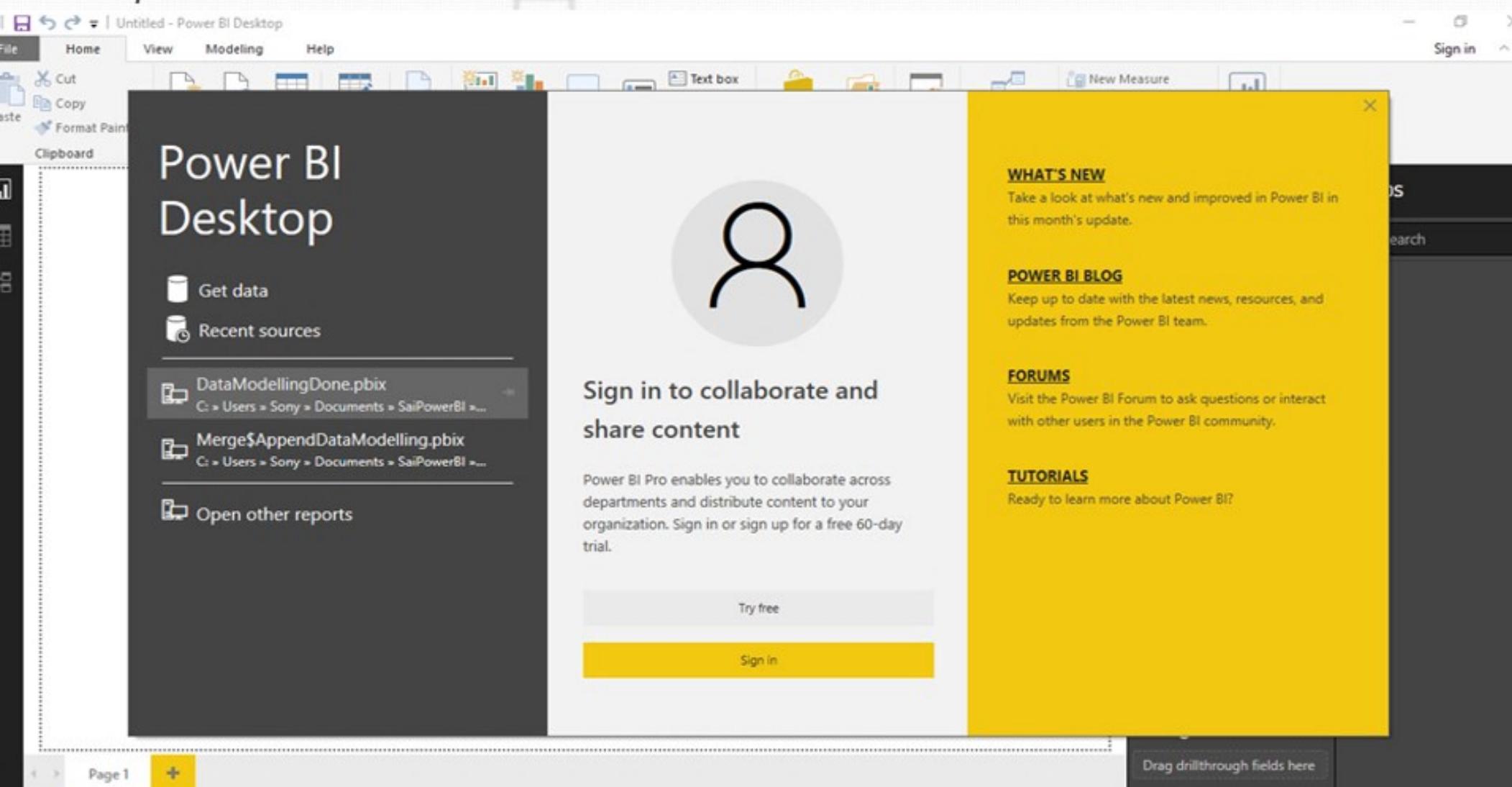
INSTALLING POWER BI DESKTOP

2. Click “Download Free” to start the Power BI Desktop download



You do **Not** need to sign in or register for a Power BI Pro account to access Power BI Desktop (*you can simply close this window*)

- Sign-in is required to collaborate and share content available through Power BI Service (app.powerbi.com)
- You would not be able to sign in through gmail / yahoo account. Microsoft requires a **work or school e-mail address**



You need a Power BI Pro account – to Share and Collaborate your report on Power BI Services .

The screenshot shows the Power BI service interface. In the center, there is a modal dialog titled "Upgrade to Power BI Pro". The dialog contains the text: "This feature is only available to users with a Power BI Pro license. When you upgrade, you get access to collaborate with others and distribute content. Upgrade today or try it free for 60 days. [Learn more](#)". Below the text are three buttons: "Try Pro for free" (yellow), "Upgrade account" (blue), and "Cancel" (gray). Behind the modal, a report titled "Regional Sales Analysis" is visible. The report features a circular donut chart showing "100.00 % Sales to All Regions". To the right of the chart is a bar chart titled "Sales by Demographic" with the following data:

Demographic	Sales
Professional	\$54M
Intermediate	\$12M
Advanced	\$7M
Novice	\$3M
Beginner	\$1M

The Power BI navigation sidebar on the left includes sections for Favorites, Recent, Apps, Shared with me, Workspaces, and My Workspace (which is currently selected). The "My Workspace" section lists a dashboard ("Excel_Sample_Superstore.xlsx") and a report ("US_Sales_Analysis").

THE POWER BI INTERFACE

Three Core Views:
Report
Data
Relationships
/or Model
(2019)

The screenshot displays the Power BI Desktop application window titled "1_Sales dashboard - Power BI Desktop". The ribbon menu includes File, Home, View, Modeling, and Help. The Home tab is selected, showing various data visualization tools like Cut, Copy, Paste, Get Data, Refresh, Insert, and Publish.

The main workspace contains a "Sales Report" visualization. It features three key metrics: Sales (2.30M), Profit (286.40K), and Order Date (range from 1/1/2014 to 12/31/2017). Below these are three charts: "Sales by Weekday" (horizontal bar chart showing sales per day of the week), "Sales by Year" (line chart showing annual sales growth from 2014 to 2017), and "Sales by Region" (pie chart showing regional distribution).

To the right of the report are two panes: "VISUALIZATIONS" and "FIELDS". The "VISUALIZATIONS" pane lists various chart and table icons. The "FIELDS" pane shows a search bar and a list of fields categorized under "Orders": Category, City, Country, Customer ID, Customer Name, Discount, Medium Deal, Order Date, Order ID, Postal Code, Product ID, Product Name, Profit, Profit type, Quantity, Region, Row ID, Sales, Segment, and Ship Date.

At the bottom of the workspace, there are tabs for Profit Type, Order date, Pie chart, Line chart, Bar chart, Table, Interactive Report, and a plus sign icon for adding new visualizations.

Quick Demo of Creating a Report Using Microsoft Power BI

Sales Analysis Report - Power BI Desktop

Akriti Lal

File Home View Modeling Help

Cut Copy Format Painter Get Data Recent Sources Enter Data Refresh New Page New Visual Ask A Question Buttons Text box Image Shapes From Marketplace From File Switch Theme Manage Relationships New Measure New Column New Quick Measure Publish Share

Clipboard External data Insert Custom visuals Themes Calculations

Sales Analysis Report

1/3/2014 9/5/2016

Sales by Category

Category	Sales
Technology	469.66K
Furniture	424.92K
Office Supplies	384.58K
ODM	0.5M

Sales & Profit of SC

Sub-Category	Sales	Profit
Phones	191.89K	27,235.55
Chairs	189.41K	15,327.07
Machines	134.72K	12,544.00
Storage	121.05K	10,423.04
Tables	117.68K	-7,573.06
Binders	98.25K	11,803.46
Accessories	85.08K	20,933.66
Bookcases	69.95K	-2,575.05
Copiers	57.97K	17,510.17
Appliances	52.23K	7,020.96
Furnishings	47.88K	6,194.20
Paper	43.02K	18,569.58
Supplies	28.36K	-125.26
Art	16.01K	3,725.97
Envelopes	10.86K	4,545.66
Labels	7.13K	3,206.79
Fasteners	1.67K	503.52
Total	1,279.16K	149,270.36

1,279.16K Sales

149.27K Profit

Sales% by Segment

Segment: Consumer (Green), Corporate (Dark Blue), Home Office (Red)

Segment	Percentage
Consumer	54.94%
Corporate	27.66%
Home Office	17.41%

VISUALIZATIONS

Search: Sales Analysis Report

Drag data fields here

FILTERS

Page level filters

Report level filters

DRILLTHROUGH

Keep all filters: Off

Drag drillthrough fields here

FIELDS

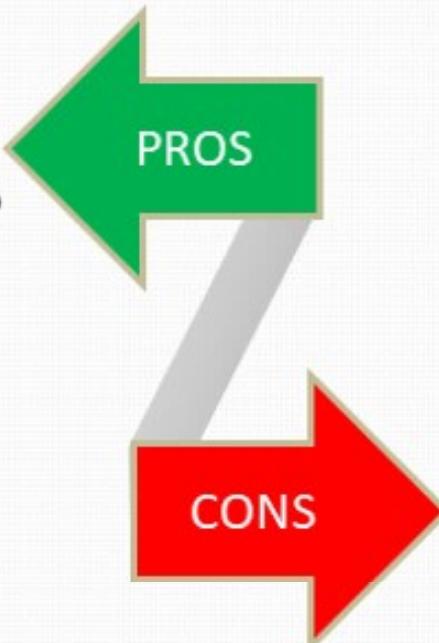
- Orders
- Category
- City
- Country
- Customer ID
- Customer Name
- Discount
- Order Date
- Order ID
- Postal Code
- Product ID
- Product Name
- Product Name...
- Profit
- Quantity
- Region
- Row ID
- Sales
- Segment
- Ship Date
- Ship Date Hier...



PROS & CONS OF MODEL BASED TOOL LIKE POWER BI VS REPORT BASED TOOL LIKE TABLEAU

Model Based Tool : Once defined, the same model can be used for different reports.

Report Based Tool : Simple to use, calculations are scoped to a single report only.



Model Based Tool : A good model that works with many different reports requires more authoring time.

Report Based Tool : Requires specific data transformation for every report. These assumes that the input is made by a single table, or something that can be transformed into a single table.