

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's a navigation bar with the Microsoft logo, 'Power BI', and links for 'Products', 'Solutions', 'Partners', and 'Learn'. On the right side of the header are 'Sign in' and 'Sign up free' buttons. A yellow curved arrow points from the 'Sign up free' button to the 'Sign up free' text in the list above. The main content area has a yellow background with the heading 'Business intelligence like never before'. Below it, a subtext reads: 'Go from data to insights in minutes. Any data, any way, anywhere. And all in one view.' A large 'START FREE >' button is centered. At the bottom, there are three devices (a laptop, a tablet, and a smartphone) each displaying a different Power BI dashboard with various charts and metrics.

INSTALLING POWER BI DESKTOP

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

The screenshot shows the Microsoft Power BI website. At the top, there's a navigation bar with the Microsoft logo, 'Power BI', and links for 'Products', 'Solutions', 'Partners', 'Learn', 'Sign in', and 'Sign up free'. Below the navigation, a large banner features the text 'Getting started with Power BI Desktop' in bold, followed by 'Less data prep, more data work'. A yellow arrow points from the text 'Visually explore your data with a familiar drag-and-drop canvas, modern data visualizations, and simple report authoring.' down towards the 'DOWNLOAD FREE' button. To the right of the banner, there's an image of a laptop displaying various data visualizations like charts and graphs, with a stylized pen lying next to it. The bottom of the page has decorative icons representing data and analysis.

Microsoft | Power BI | Products | Solutions | Partners | Learn | Sign in | Sign up free

Getting started with
Power BI Desktop

Less data prep, more data work

Visually explore your data with a familiar drag-and-drop canvas, modern data visualizations, and simple report authoring.

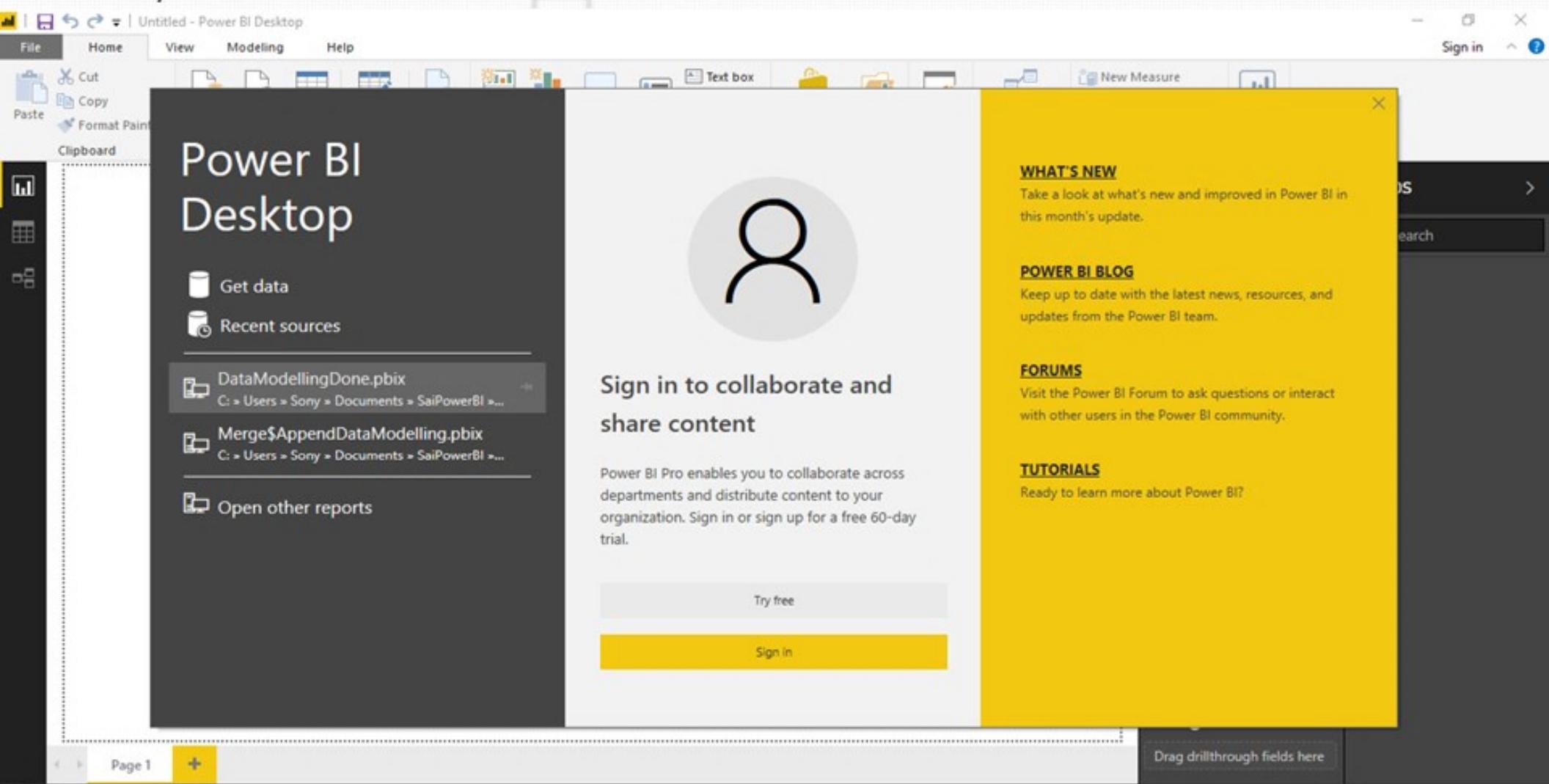
DOWNLOAD FREE >

A yellow arrow points from the descriptive text above to the 'DOWNLOAD FREE' button.

A laptop screen displays various data visualizations (charts, graphs) and a stylized pen lies next to it.

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 top left, there's a navigation bar with icons for back, forward, and search, followed by a secure connection indicator and the URL <https://app.powerbi.com/groups/me/reports/492d7d07-3e1e-4537-829a-e411f4f5163f/ReportSection>. To the right of the URL are standard browser controls: star, refresh, and three dots.

The main header area includes the "Power BI" logo, a "My Workspace" icon, and the report title "US_Sales_Analysis". Below the header are standard navigation buttons: File, View, Edit report, Explore, Refresh, Pin Live Page, and a "View related" button. To the right of these are "Favorite", "Subscribe", and "Share" buttons, along with a three-dot menu.

The left sidebar contains a vertical navigation menu:

- Favorites
- Recent
- Apps
- Shared with me
- Workspaces
- My Workspace (selected)
- DASHBOARDS: Excel_Sample_Superstore.xlsx
- REPORTS: US_Sales_Analysis
- WORKBOOKS: You have no workbooks
- DATASETS: Excel_Sample_Superstore, US_Sales_Analysis

At the bottom of the sidebar is a "Get Data" button with a gear icon.

The central content area displays a report titled "Regional Sales Analysis" for "Tailspin Toys". The report features a large circular donut chart stating "100.00 % Sales To All Regions". Below it is a bar chart titled "Sales and Avg Price by Month" comparing January, February, and March sales. To the right of the chart is a horizontal bar chart titled "Sales by Demographic" showing sales for Professional, Intermediate, Advanced, Novice, and Beginner levels.

A prominent modal window is overlaid on the report, titled "Upgrade to Power BI Pro". It 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." Below the text are three buttons: "Try Pro for free", "Upgrade account", and "Cancel".

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

The main workspace displays a "Sales Report" with the following key metrics:
- Sales: 2.30M
- Profit: 286.40K

Three visualizations are shown:
1. Sales by Weekday: Horizontal bar chart showing sales for each day of the week.
2. Sales by Year: Line chart showing total sales over the years 2014, 2015, 2016, and 2017.
3. Sales by Region: Pie chart showing sales distribution across East, West, Central, and South regions.

A detailed table of product sales data is displayed, including columns for Product Name, Quantity, Profit type, Sales, Large Deal, Medium Deal, and Small Deal.

The bottom navigation bar includes tabs for Profit Type, Order date, Pie chart, Line chart, Bar chart, Table, Interactive Report, and a plus sign for adding new visualizations.

The right side of the interface features two panes:

- VISUALIZATIONS**: A grid of icons representing different visualization types.
- FIELDS**: A list of data fields categorized under Orders, such as 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. There are also sections for Values, Filters, Page level filters, Report level filters, and Drillthrough.

Quick Demo of Creating a Report Using Microsoft Power BI

Sales Analysis Report - Power BI Desktop

File Home View Modeling Help Akriti Lal

Cut Copy Format Painter Paste Get Data Recent Sources Enter Data Edit Queries 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 Calculations Share

Sales Analysis Report

1/3/2014 9/5/2016

Sales by Category

Category	Sales
Technology	469.66K
Furniture	424.92K
Office Supplies	384.58K
0.0M	0.5M

Sales & Profit of SC

Sub-Category	Sales	Profit
Phones	191.89K	27.235.55
Chairs	189.41K	15.327.07
Machines	154.72K	12.544.00
Storage	127.05K	10.423.04
Tables	117.68K	-7.573.08
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	47.08K	6.194.20
Paper	43.02K	18.569.48
Supplies	28.36K	-125.26
Art	16.01K	3.725.97
Envelopes	10.86K	4.545.66
Labels	7.13K	3.205.79
Fasteners	1.67K	503.52
Total	1,279.16K	149.27K

Sales% by Segment

Segment: Consumer Corporate Home Office

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

VISUALIZATIONS >

FIELDS >

Search

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...

FILTERS

Page level filters

Report level filters

DRILLTHROUGH

Keep all filters

Off

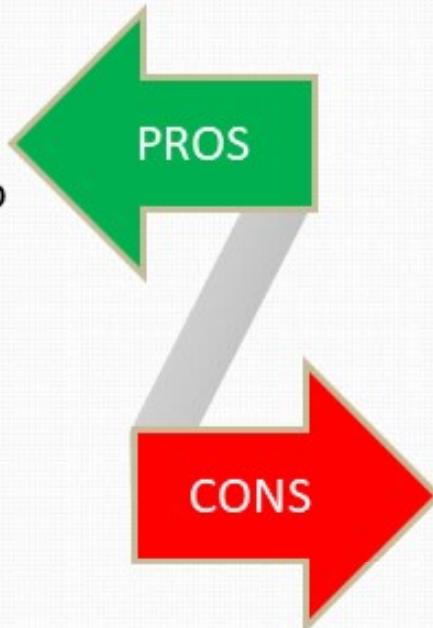
Drag drillthrough fields here



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.





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.

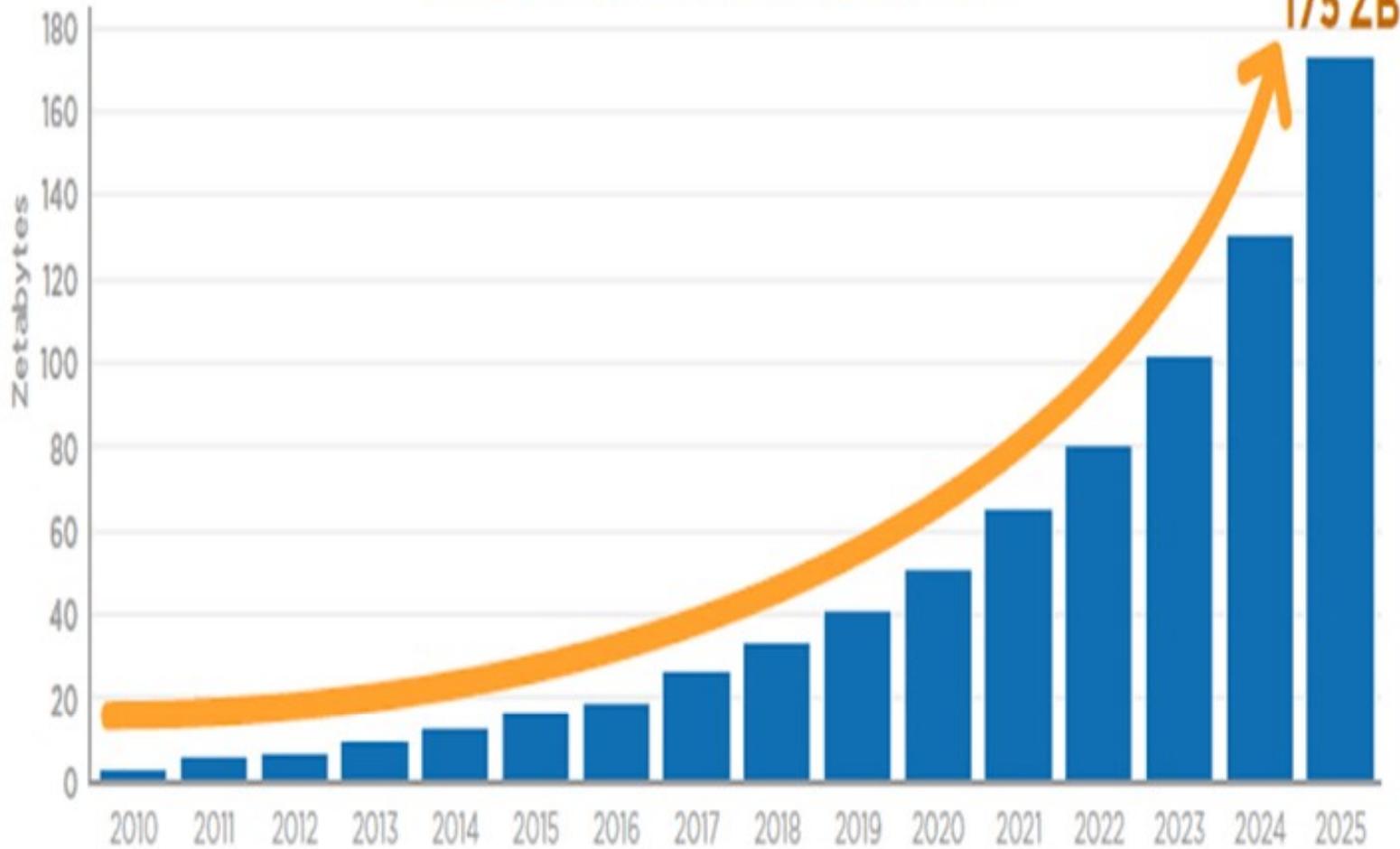


INTRODUCTION TO POWER BI

- 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

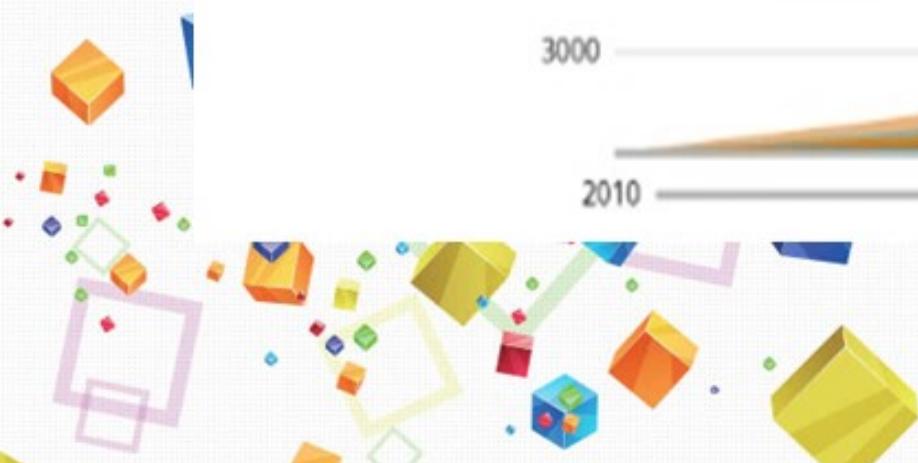


Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

WHERE IS DATA COMING FROM?

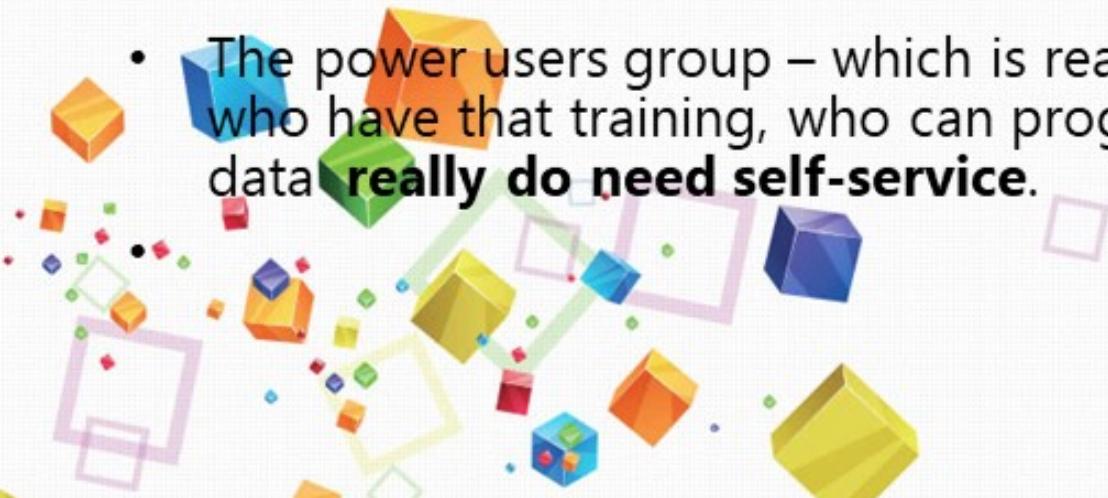
BIG IN GROWTH, TOO.

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

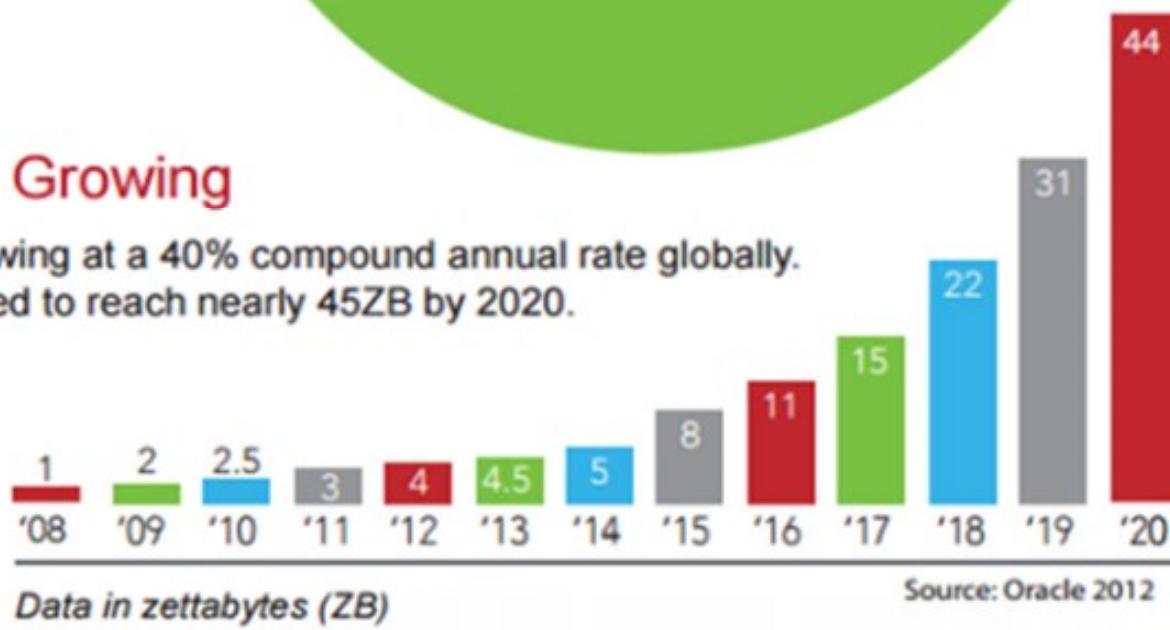
1,000 gigabytes =
1 terabyte

1 million terabytes =
1 exabyte



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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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	
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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

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



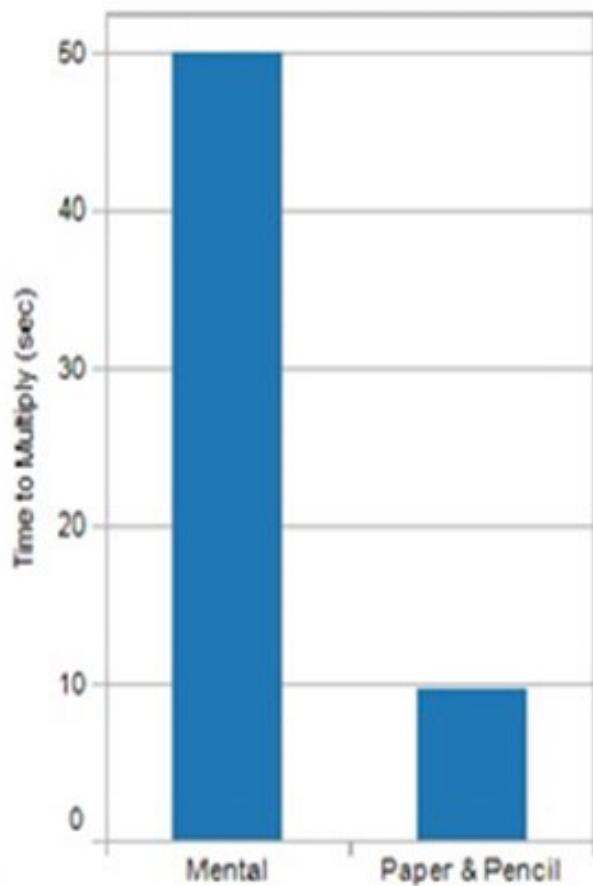
Using Pen & Paper

We're Faster When We Use the Pen

24
 \times 86

144
1920

2064



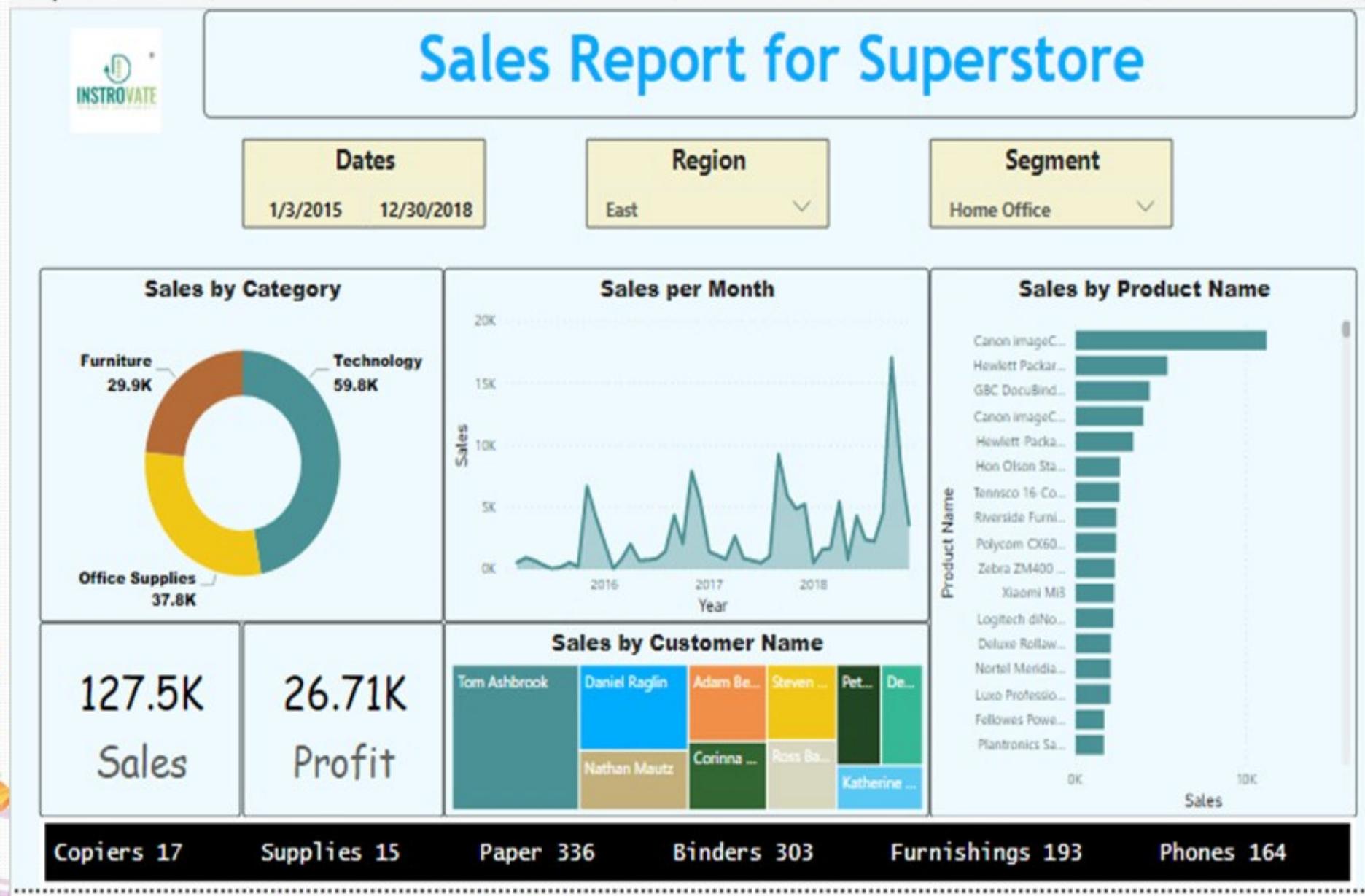
We're Much Faster When We Can "See" Data

Sales per Category/ Sub Category

Category	Sub-Category	Sales
Technology	Phones	330007.1
Furniture	Chairs	328449.1
Office Supplies	Storage	223843.6
Furniture	Tables	206955.5
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



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.

