

Introduction to Power BI

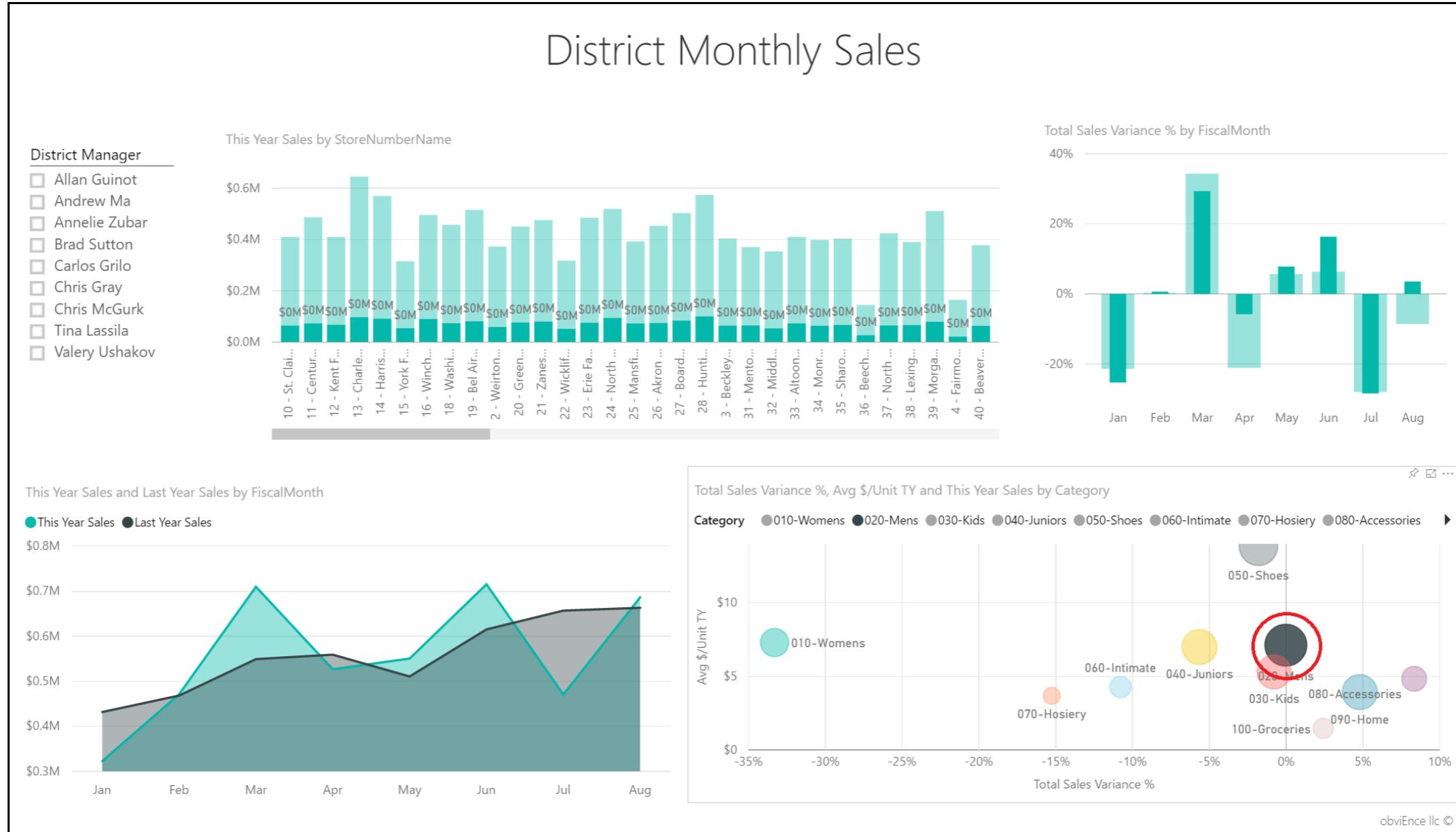
INTRODUCTION TO POWER BI



Lis Sulmont

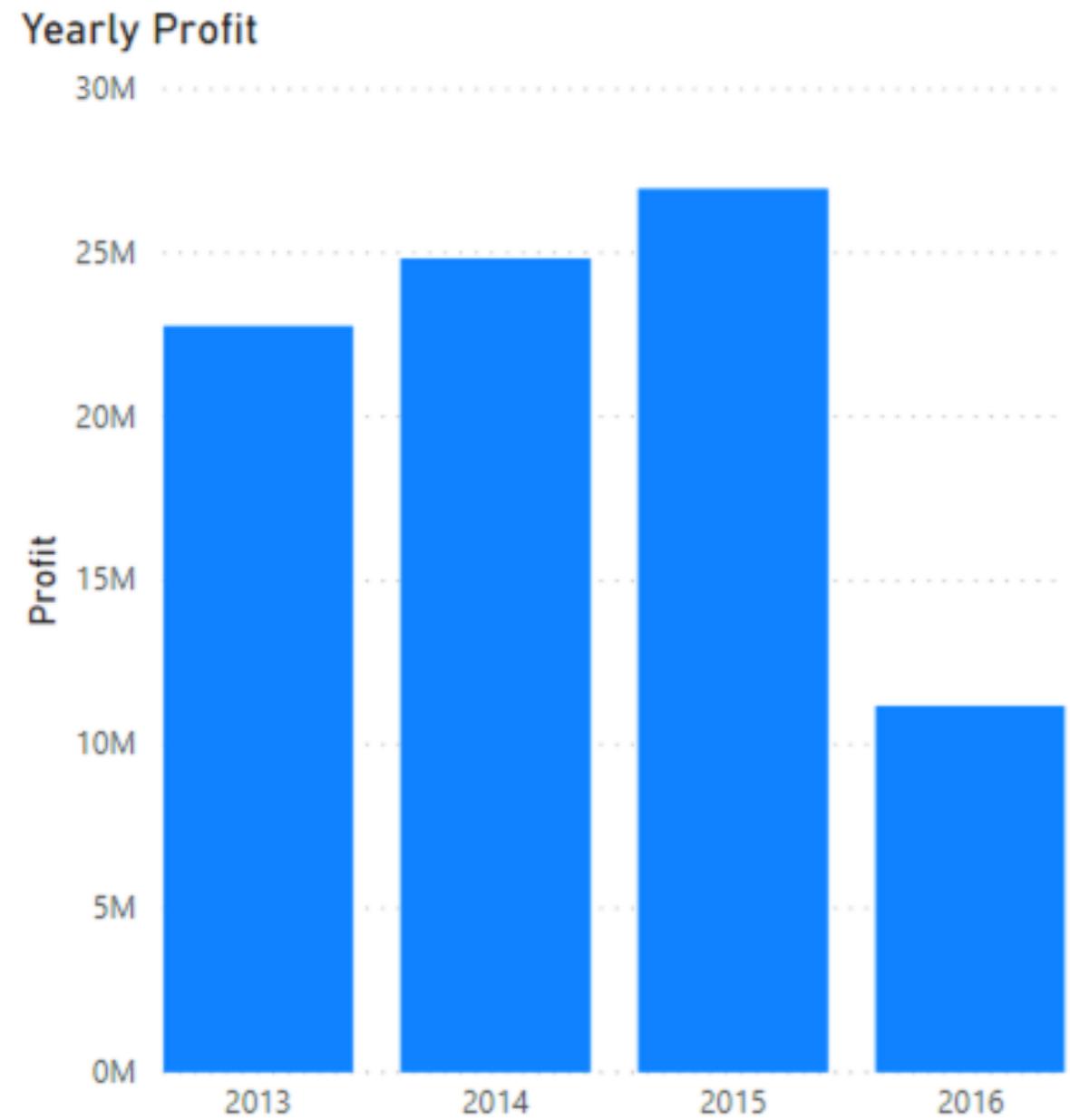
Curriculum Manager, DataCamp

What is Power BI?



¹ <https://docs.microsoft.com/en-us/power-bi/create-reports/sample-retail-analysis>

Data Visualization in Power BI



Total Excluding Tax	Tax Amount	Profit	Total Including Tax
129	19.35	67.5	148.35
258	38.7	135	296.7
301	45.15	157.5	346.15
172	25.8	90	197.8
86	12.9	45	98.9
387	58.05	202.5	445.05
387	58.05	202.5	445.05
387	58.05	202.5	445.05
344	51.6	180	395.6
344	51.6	180	395.6
344	51.6	180	395.6
344	51.6	180	395.6
258	38.7	135	296.7
258	38.7	135	296.7
258	38.7	135	296.7
258	38.7	135	296.7

Why Power BI?

- Leading BI tool according to Gartner
- Over 97% of Fortune 500 companies use Power BI
- Over 6 million customers

Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms



Source: Gartner (February 2021)

Power BI Components

Power BI Desktop

- Desktop version
- Data analysis and report creation tool
- Includes the Power Query Editor
- 100% free

Power BI service

- Cloud-based version
- Light report editing
- Share and distribute reports

Power BI Pro

Exclusive features:

- Publish and share across the Power BI cloud platform
- Mobile app
- Collaborate with other Power BI users

Power BI Interface

The image consists of three side-by-side screenshots of the Power BI interface.

- Power BI Desktop:** Shows the main menu bar with "File", "Home", "Visuals", "Insert", "Data", "Format", "Report", "Help". Below the menu, there are two red-bordered buttons: "Get data" and "Recent sources". A list of recent files is shown, with the first item "2.2.6ScreencastStart.pbix" highlighted. At the bottom is a red-bordered button "Open other reports".
- Sign-in Page:** Features a large user icon. The text "Sign in to collaborate and share content" is displayed. Below it, a paragraph explains that Power BI Pro enables collaboration across departments and distributing content. It includes a "Try free" button and a yellow "Sign in" button.
- Promotional Pop-up:** A yellow box with a red close button in the top right corner. The word "Close" is written in red. Inside the box, there are sections for "WHAT'S NEW" (with a note about monthly updates), "POWER BI BLOG" (with a note about staying updated with news and resources), "FORUMS" (with a note about the Power BI Forum for community interaction), and "TUTORIALS" (with a note about learning more about Power BI). The entire pop-up is set against a yellow background.

Power BI Interface - Three views

The screenshot illustrates the Power BI Desktop interface with three main views:

- Home View:** The primary workspace where visualizations are displayed. It includes:
 - A large blue treemap visualization titled "Amount by AccountType" showing segments for Income and Expense.
 - A bar chart titled "Amount by MonthName and ScenarioName" comparing Actual, Budget, and Forecast values across months from November to January.
 - A detailed table at the bottom showing sales figures for various product categories (Cameras and camcorders, Cell phones, Computers, Games and Toys, Home Appliances, Music, Movies and Audio Books, TV and Video) across four scenarios: Actual, Budget, Forecast, and Total.
- Visualizations View:** A sidebar on the right containing:
 - A "Filters" section with a search bar and dropdown for selecting years from 2015 to 2020.
 - A "Values" section with a search bar and a placeholder for "Add data fields here".
 - A "Drill through" section with options for "Cross-report" (set to Off) and "Keep all filters" (set to On).
 - A "Add drill-through fields here" placeholder.
- Fields View:** Another sidebar on the right containing:
 - A "Search" bar.
 - A tree view of data sources:
 - DimAccount
 - DimDate
 - DimProductCateg...
 - DimScenario
 - FactStrategyPlan

Power BI Interface - Report View

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The ribbon is visible at the top with the "Home" tab selected. A red arrow points to the "Report View" icon in the ribbon. The main workspace contains three visualizations:

- Amount by AccountType:** A treemap chart showing the distribution of amounts by account type, with a large blue segment labeled "Expense".
- Amount by MonthName and ScenarioName:** A grouped bar chart comparing Actual, Budget, and Forecast values across months from November to January.
- ScenarioN:** A table showing financial data for various product categories across four scenarios: Actual, Budget, Forecast, and Total.

The ribbon also shows the "Clipboard" section highlighted with a red box. The "Filters", "Visualizations", and "Fields" panes are open on the right side of the interface.

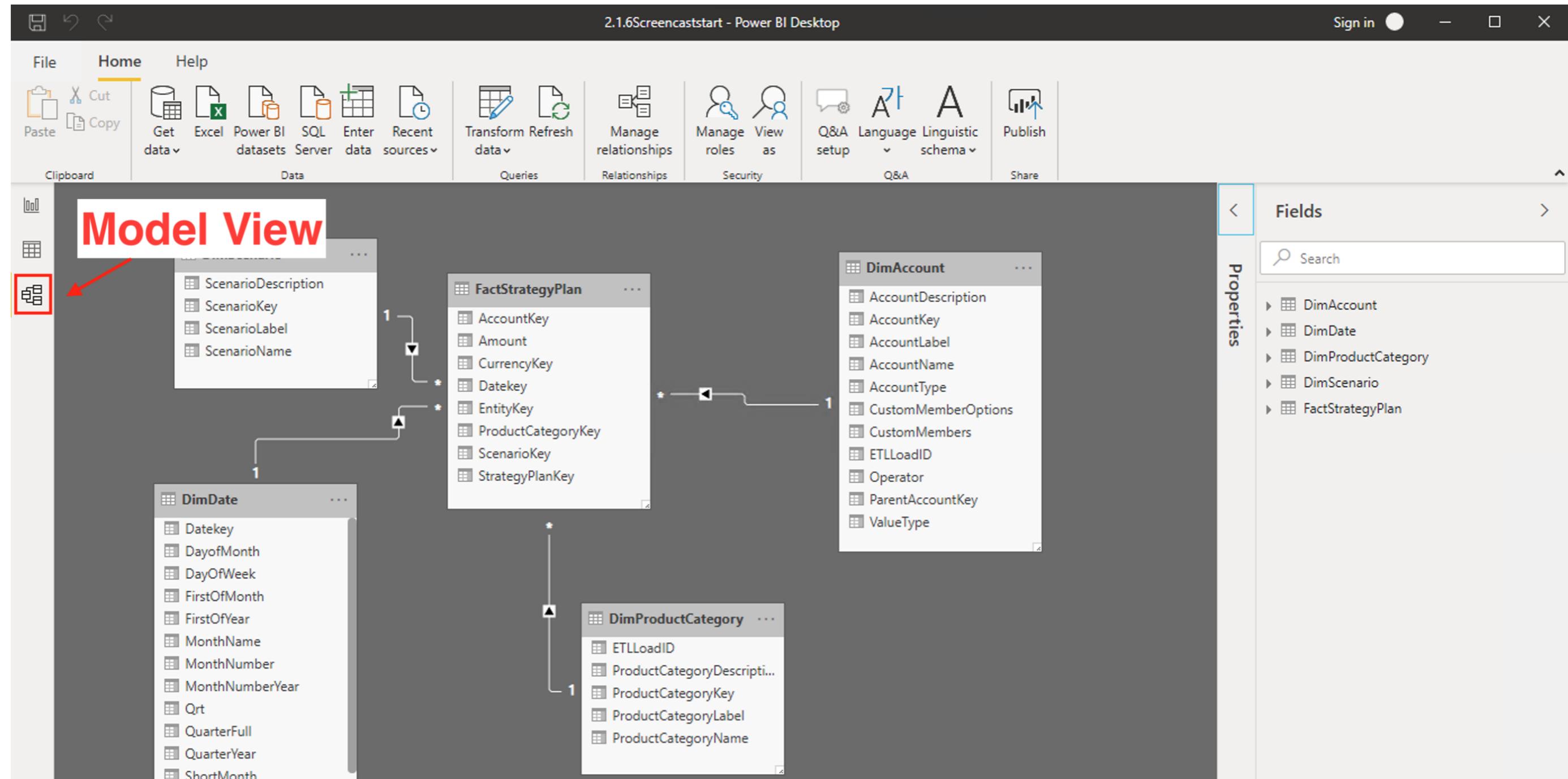
ScenarioName	Audio	Cameras and camcorders	Cell phones	Computers	Games and Toys	Home Appliances	Music, Movies and Audio Books	TV and Video
Actual	273,081,757.15	3,587,092,338.37	1,287,810,461.47	4,593,694,374.88	218,933,396.02	5,665,988,969.42	230,738,587.69	2,485,487,457.19
Budget	256,826,621.81	3,347,605,529.68	1,208,041,332.59	4,307,849,337.57	207,049,792.29	5,299,115,246.06	215,317,906.62	2,330,834,374.94
Forecast	273,397,435.67	3,572,004,626.25	1,285,330,168.28	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12
Total	803,305,814.64	10,506,702,494.30	3,781,181,962.35	13,487,431,779.03	645,713,709.26	16,629,515,967.52	675,921,659.33	7,112,453,151.25

Power BI Interface - Data View

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The "Table tools" tab is selected in the ribbon. A red box highlights the table icon in the "Structure" group of the ribbon. The main area displays a data view of account information, with a large red "Data View" watermark overlaid on the table. The table has columns: AccountKey, ParentAccountKey, AccountLabel, AccountName, AccountDescription, AccountType, Operator, CustomMembers, ValueType, and CustomM. The data includes various account categories like Profit and Loss after tax, Income, Expense, and Marketing Cost. The right side of the screen shows the "Fields" pane with a search bar and a list of fields from the DimAccount table, including AccountDescription, AccountKey, AccountLabel, AccountName, AccountType, CustomMemberO..., CustomMembers, ETLLoadID, Operator, ParentAccountKey, ValueType, and links to DimDate, DimProductCateg..., DimScenario, and FactStrategyPlan.

AccountKey	ParentAccountKey	AccountLabel	AccountName	AccountDescription	AccountType	Operator	CustomMembers	ValueType	CustomM
1	NULL		100000 Profit and Loss after tax	Profit and Loss after tax	NULL	NULL	NULL	NULL	NULL
111000	Income		111000 Income	Income	Income	+	NULL	Income	+
112000	Expense		112000 Expense	Expense	Expense	-	NULL	Expense	-
110100	Sale Revenue		110100 Sale Revenue	Sale Revenue	Income	+	NULL	Income	+
112100	Cost of Goods Sold		112100 Cost of Goods Sold	Cost of Goods Sold	Expense	+	NULL	Expense	+
112200	Selling, General & Administrative Expenses		112200 Selling, General & Administrative Expenses	Selling, General & Administrative Expenses	Expense	+	NULL	Expense	+
112300	Administration Expense		112300 Administration Expense	Administration Expense	Expense	+	NULL	Expense	+
112400	IT Cost		112400 IT Cost	IT Cost	Expense	+	NULL	Expense	+
112500	Human Capital		112500 Human Capital	Human Capital	Expense	+	NULL	Expense	+
112600	Light, Heat, Communication Cost		112600 Light, Heat, Communication Cost	Light, Heat, Communication Cost	Expense	+	NULL	Expense	+
112700	Property Costs		112700 Property Costs	Property Costs	Expense	+	NULL	Expense	+
112800	Other Expenses		112800 Other Expenses	Other Expenses	Expense	+	NULL	Expense	+
112900	Marketing Cost		112900 Marketing Cost	Marketing & Advertisement Cost	Expense	+	NULL	Expense	+
112910	Holiday Ad Cost		112910 Holiday Ad Cost	Holiday Ad Cost	Expense	+	NULL	Expense	+
112920	Spring Ad Cost		112920 Spring Ad Cost	Spring Ad Cost	Expense	+	NULL	Expense	+
112930	Back-to-School Ad Cost		112930 Back-to-School Ad Cost	Back-to-School Ad Cost	Expense	+	NULL	Expense	+
112940	Business Ad Cost		112940 Business Ad Cost	Business Ad Cost	Expense	+	NULL	Expense	+
112950	Tax Time / Summer Ad Cost		112950 Tax Time / Summer Ad Cost	Tax Time / Summer Ad Cost	Expense	+	NULL	Expense	+
131000	Taxation		131000 Taxation	Taxation	Taxation	-	NULL	Taxation	-
112911	Radio & TV		112911 Radio & TV	Holiday Ad Cost by Radio & TV	Expense	+	NULL	Expense	+
112912	Print		112912 Print	Holiday Ad Cost by Print	Expense	+	NULL	Expense	+
112913	Internet		112913 Internet	Holiday Ad Cost by Internet	Expense	+	NULL	Expense	+
112914	Other		112914 Other	Holiday Ad Cost by Other	Expense	+	NULL	Expense	+

Power BI Interface - Model View



Power BI Interface - Canvas area

The screenshot shows the Power BI Desktop interface with the following details:

- Home Tab:** Selected in the ribbon menu.
- Clipboard:** Contains icons for Paste, Cut, Copy, and Format painter.
- Data:** Contains icons for Get data (with dropdown for Excel, Power BI datasets, SQL Server, Enter data sources), Transform Refresh data, New visual, Text box, More visuals, New measure, Quick measure, Publish, and Share.
- Insert:** Contains icons for Insert, Modeling, View, and Help.
- Canvas Area:** Displays a dashboard with:
 - A large blue bar chart titled "Amount by AccountType" with segments for Income and Expense.
 - A smaller bar chart titled "Amount by MonthName and ScenarioName" comparing Actual, Budget, and Forecast values across months from November to January.
 - A table showing detailed financial data for various product categories (Cameras and camcorders, Cell phones, Computers, Games and Toys, Home Appliances, Music, Movies and Audio Books, TV and Video) across four scenarios (Actual, Budget, Forecast, Total).
- Filters:** Shows a list of filters applied to the dashboard, including years from 2015 to 2020 and a "Select all" option.
- Visualizations:** Shows a grid of visualization icons.
- Fields:** Shows a list of fields categorized under DimAccount, DimDate, DimProductCateg..., DimScenario, and FactStrategyPlan.
- Drill through:** Shows options for Cross-report (Off or On) and Keep all filters (On or Off).

Power BI Interface - Filters pane

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The ribbon menu is visible at the top, with the "Home" tab selected. In the center, there are two visualizations: a treemap chart titled "Amount by AccountType" and a bar chart titled "Amount by MonthName and ScenarioName". Below these is a table titled "ScenarioN" with columns for "Actual", "Budget", "Forecast", and "Total" for various product categories. On the right side, the "Filters" pane is open and highlighted with a red border. It contains sections for "Filters on this page" and "Filters on all pages", each with a "Add data fields here" button. A large red text overlay "Filters Pane" is centered over the pane. To the right of the filters pane, the "Visualizations" and "Fields" panes are also visible.

Amount by AccountType

Income Expense

Amount by MonthName and ScenarioName

ScenarioName Actual Budget Forecast

MonthName November December May July August June October April September March February January

ScenarioN

Actual	Budget	Forecast	Total	Cameras and camcorders	Cell phones	Computers	Games and Toys	Home Appliances	Music, Movies and Audio Books	TV and Video
273,081,757.15	256,826,621.81	273,397,435.67	803,305,814.64	3,587,092,338.37	1,287,810,461.47	4,593,694,374.88	218,933,396.02	5,665,988,969.42	230,738,587.69	2,485,487,457.19
256,826,621.81	3,347,605,529.68	3,572,004,626.25	10,506,702,494.30	1,208,041,332.59	1,285,330,168.28	4,307,849,337.57	207,049,792.29	5,299,115,246.06	215,317,906.62	2,330,834,374.94
273,397,435.67	3,572,004,626.25	3,781,181,962.35	13,487,431,779.03	645,713,709.26	16,629,515,967.52	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12
803,305,814.64	10,506,702,494.30	3,781,181,962.35	13,487,431,779.03	645,713,709.26	16,629,515,967.52	4,585,888,066.58	219,730,520.95	5,664,411,752.04	229,865,165.02	2,296,131,319.12

Filters

Search

Select all

2020

2019

2018

2017

2016

2015

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Visualizations

Fields

Search

DimAccount

DimDate

DimProductCateg...

DimScenario

FactStrategyPlan

Values

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

Filters Pane

Power BI Interface - Visualizations pane

The screenshot shows the Power BI Desktop application window with the following details:

- Top Bar:** Includes File, Home, Insert, Modeling, View, and Help tabs.
- Home Tab:** Contains options for Paste, Cut, Copy, Format painter, Get data (Excel, Power BI datasets, SQL Server), Enter data sources, Transform Refresh data, New visual, Text box, More visuals, New measure, Quick measure, Publish, Share, and Clipboard.
- Visualizations:** A large area displaying three visualizations:
 - A blue treemap visualization titled "Amount by AccountType" showing "Income" and "Expense".
 - A bar chart titled "Amount by MonthName and ScenarioName" comparing Actual, Budget, and Forecast values across months from November to January.
 - A table titled "ScenarioName" showing detailed financial data for various product categories like Audio, Cameras and camcorders, Cell phones, Computers, Games and Toys, Home Appliances, Music, Movies and Audio Books, and TV and Video.
- Filters:** A sidebar containing filters for the current page and all pages, with sections for Select all, 2020, 2019, 2018, 2017, 2016, 2015, and Add data fields here.
- Visualizations Pane:** A red-bordered panel on the right side of the interface, titled "Visualizations", which includes:
 - Visualizations:** A grid of visualization icons.
 - Fields:** A list of data fields categorized under DimAccount, DimDate, DimProductCateg..., DimScenario, and FactStrategyPlan.
 - Values:** A section for adding data fields.
 - Drill through:** Options for Off (radio button) and On (radio button).
 - Cross-report:** An off switch.
 - Keep all filters:** An on switch.
 - Add drill-through fields here:** A placeholder for adding fields.

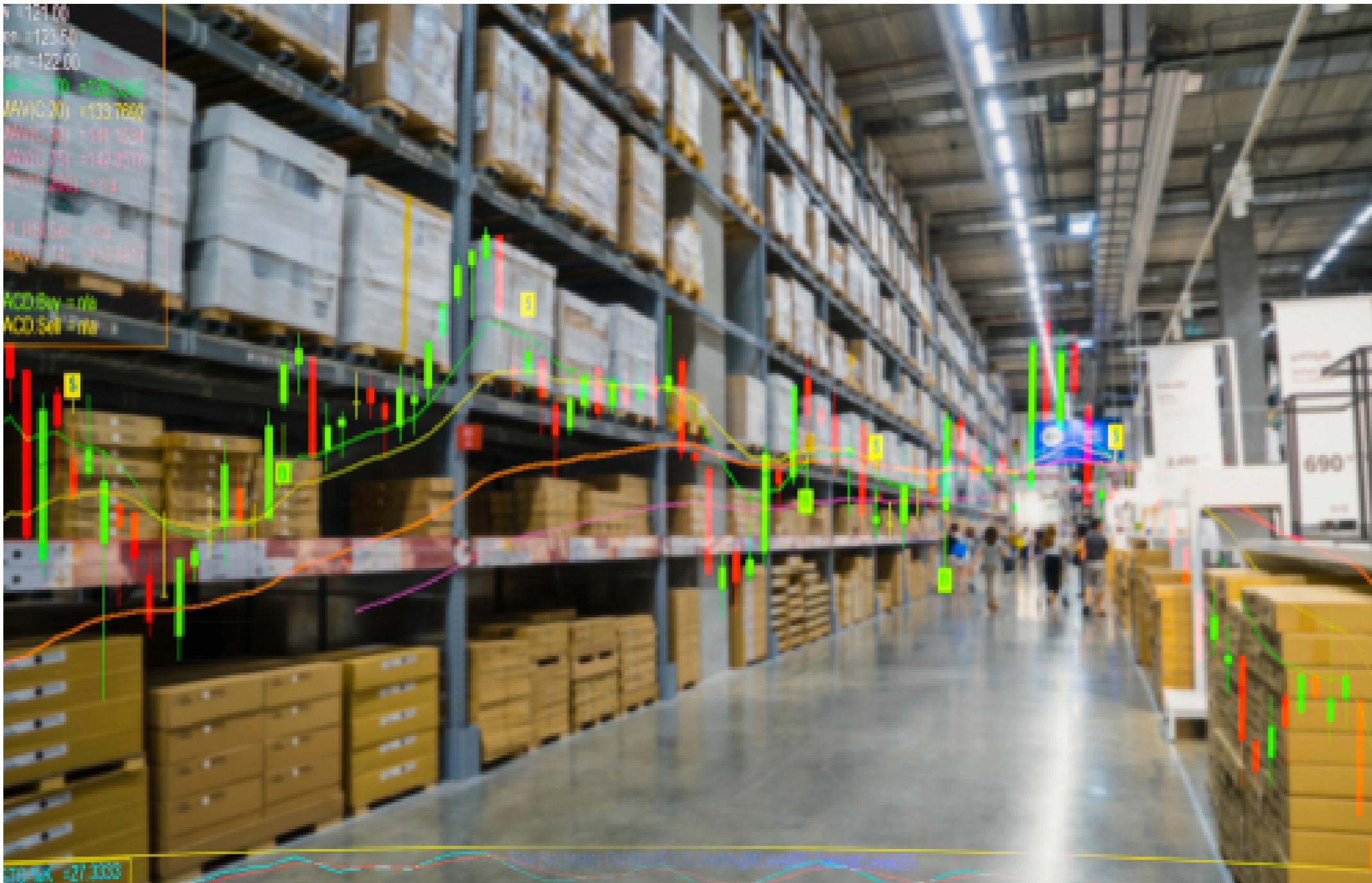
Power BI Interface - Fields pane

The screenshot shows the Power BI Desktop application window titled "2.1.6Screencaststart - Power BI Desktop". The ribbon menu is visible at the top, with the "Home" tab selected. Below the ribbon, there are three main visualizations: a treemap chart titled "Amount by AccountType" showing "Income" and "Expense" categories, a bar chart titled "Amount by MonthName and ScenarioName" comparing "Actual", "Budget", and "Forecast" values across months from November to January, and a table titled "ScenarioName" showing detailed financial data for various product categories like Audio, Cameras and camcorders, Cell phones, etc., across four scenarios: Actual, Budget, Forecast, and Total.

The "Fields" pane on the right side of the interface is highlighted with a red border. It contains sections for "Visualizations", "Values", "Drill through", "Cross-report", and "Keep all filters". The "Visualizations" section lists various data sources and tables such as DimAccount, DimDate, DimProductCategory, DimScenario, and FactStrategyPlan. The "Values" section has a placeholder "Add data fields here". The "Drill through" section has a placeholder "Add drill-through fields here". The "Cross-report" section has a switch set to "Off". The "Keep all filters" section has a switch set to "On".

**Fields
Pane**

Wide World Importers (wwi) dataset



Wide World Importers (WWI) dataset structure

- Star schema
- **Fact Table:**
 - FactSales.csv
- **Dimension Tables:**
 - DimCustomer.csv
 - DimEmployee.xlsx
 - DimStockItem.csv
 - DimDate.csv
 - DimCity.csv

Let's practice!

INTRODUCTION TO POWER BI

Getting started!

INTRODUCTION TO POWER BI



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Let's practice!

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Slicers and Tables

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