AfterWork

Getting Started with PowerBI

Learning Outcomes

By the end of this session, you will have achieved the following learning outcomes:

- Prepare data for a report by importing, transforming data, and cleaning the data.
- Design data models for reports by creating relationships, configuring properties, and performing calculations.
- Create PowerBI reports by adding individual elements customizing the appearance and publishing the reports.
- Use the Power BI service to share reports with other stakeholders.

"Predicting the future isn't magic, it's artificial intelligence." ~Dave Waters

Overview

What is PowerBI?

Power Business Intelligence or PowerBi is a collection of software services, apps, and connectors that convert data from different sources into a visually immersive and interactive form, such as interactive dashboards and reports.

History

PowerBI was originally released to the public in 2011 by Microsoft as Project Cresent and later released in 2013 as Power BI for Office 365.

Examples of Dashboards

- Executive Insights [Link]
- Airport Authority Performance Summary [Link]
- Product Discounting Sales Scenarios - 'What If' analysis [Link]

PowerBI Applications

Power BI consists of several applications that can work together.

- **Power BI Desktop**, a windows application.
- **Power BI Service**, online software as a service.
- **Power BI Mobile App** for Windows, iOS, and Android devices.
- **Power BI Report Builder** for creating paginated reports to share in the Power BI service.
- **Power BI Report Server,** an on-premises report server for publishing your Power BI reports after creating them in Power BI Desktop.

Real-life Case Study

The following is an example of implementing power BI within an organization to solve a problem.

Source [Link]

> *Meijer had significantly become dependent on its IT organization to extract insights from the data that is used to generate. It was time-consuming and inefficient to wait for IT to build every report. Meijer was unable to perform ad hoc and real-time analysis efficiently. So, Meijer connected Power BI to an on-premises SQL Server Analysis Services cube. This allowed them to refresh 20 billion rows of data in near real-time. With Power BI, teams can now pull in the data faster and perform real-time analysis to derive insights from data.*

> *A bakery department inside Meijer used Power BI to compare its sales with regional performance. They analyzed where Meijer was behind the regional trends, focused on the problem, and created a solution. Power BI can drill down into hourly sales and send a sales flash to 800 Meijer business leaders. Power BI enabled them to standardize data sources and empower store directors and team leaders to develop and track their data to ensure that they can improve.*

Why is PowerBI Important?

- It is used to gain early insights within an organization's data, connect disparate data sets, transform and clean the data into a data model and create charts or graphs to provide visuals of the data.
- It helps answer questions in real-time and helps with forecasting to make sure teams meet business metrics.
- It provides dashboards for administrators or managers, giving management more insight into how teams are doing.

When should you use Power BI?

- When we want to create and view reports and dashboards.
- When we want to monitor key metrics.
- When we want to track leads.
- When we want to push data into a dataset using Power BI APIs.
- When we want to embed dashboards into custom web applications.
- When we want to track inventory.
- When we want to reduce data analysts' efforts and create data-wrangling automated processes.

Solution built with Dashboards

Enterprise-wide BI:

- Enterprise-wide BI
- Company-wide data visualization
- Enterprise-wide data analysis with the possibility to drill down.

Financial Analytics

- Financial KPI dashboards Revenue
- Cost and performance analysis.
- Visualization of accounts receivable and accounts payable.
- Financial fraud detection in near-real-time.

Sales and Marketing Analytics

- Customer profiling and segmentation.
- Leads analytics in near-real-time.
- Sales pipeline and sales performance dashboards.

Operational Analytics

- Business process performance analysis, detecting bottlenecks.
- Performance prediction and forecasting.

Healthcare Analytics

- Visualization of patient personal data, vitals, etc.
- Personalized care plan recommendations.
- Patient management.

Working with Power BI

A popular PowerBI workflow entails connecting to data sources in PowerBI Desktop, building a report/dashboard, and sharing it so business users.

Step 1. Connecting to your data

- We can connect data from various sources to Power BI. Power BI gateways connect with SQL Server databases, analytical Services, and other data sources to your dashboard and reporting portals.

Step 2. The preformatting of data/performing data wrangling

- Once your data has been loaded, we can shape the data according to your needs. This shaping or transforming the data includes renaming columns or tables, changing the text to numbers, removing rows, setting the first row as headers, and so on.

Step 3. Modeling of data / performing data analysis

- We enhance the data with relationships, calculations, measures, hierarchies, etc., we can use that to find business insights. Also, you can write a query to enhance data for better visualizations and analytics.

Step 4. Data visualization

- We visualize our transformed data into reports/dashboards.

Step 5. Publishing data reports

Reports vs. Dashboards

A PowerBI **Dashboard** is a single page, often called a canvas, that uses visualizations to tell a story. Because it is limited to one page, a well-designed dashboard contains only the most important elements of that story. The visualizations visible on the dashboard are known as tiles. These tiles are pinned to the dashboard from reports. The visualizations on a dashboard come from reports, and each report is based on one data set.

A PowerBI **Report** is a multi-perspective view of a data set with visualizations that represent different findings and insights from that data set. A report may be a single visualization or pages full of visualizations. The visualizations in a report represent a nugget of information. These visualizations aren't static; you have an option to add and remove data, change visualization types, and apply filters in your quest to discover insights and look for answers. As a dashboard, a report is highly interactive, highly customizable, and the visualizations update as the underlying data changes.

References

You can also use the following resources for further reading.
1. Power BI Connectivity Types [Link]
2. Top 10 Best Power BI Dashboard Examples in 2021 [Link]
3. Power vs. Tableau Comparison: [Link]