

DATA VISUALIZATION STRATEGIES WITH TABLEAU AND POWER BI

Saketh Reddy Cheruku¹, Prof.(Dr.) Arpit Jain² & Er. Om Goel³

¹*Independent Researcher, Pulimamidi Estates Beside Sri Sai Prashanthi Highschool Bhongir Nalgonda Highway, Bhongir
Yadadrinbhongir (Dist) Telangana, India*

²*KL University, Vijaywada, Andhra Pradesh, India*

³*Independent Researcher, ABES Engineering College Ghaziabad, India*

ABSTRACT

Data visualization is essential to industry decision-making in the data-driven age. Tableau and Microsoft Power BI, two of the most popular data visualization tools, are examined in this paper. Both systems have sophisticated functionality for turning raw data into valuable insights, but they serve distinct user demands and corporate situations. This research investigates each tool's architecture, features, and application situations to determine its strengths and weaknesses. The study compares these products' user experience, integration capabilities, and performance to help enterprises choose the right data visualization platform.

Tableau is famous for its easy-to-use interface and sophisticated data visualization. Its simplicity of sophisticated visualization makes it a favorite among analysts and data scientists who need to draw conclusions from vast datasets. Tableau's drag-and-drop feature and many visualization choices let users build dynamic and attractive dashboards without scripting. Tableau's flexibility to connect to cloud services, databases, and spreadsheets makes it useful for many businesses.

However, Microsoft Power BI's easy interaction with the Microsoft environment and affordability for Microsoft-using enterprises have made it popular. Business users and IT professionals use Power BI for its data modeling, visualization, and sharing features. Power BI's integration with Azure, Office 365, and Dynamics 365 makes it appealing to Microsoft-integrated companies. Power BI's AI-powered insights and natural language querying allow consumers to analyze complex data without technical skills.

This paper examines Tableau and Power BI's scalability and cooperation, which are essential for big teams and remote workforces. The Tableau Server and Tableau Online provide strong team visualization sharing and collaboration tools. Tableau Server provides a secure, on-premises environment for managing and sharing data visualizations, while Tableau Online offers a cloud-based solution for organizations seeking a more flexible deployment option. However, Power BI Service, a cloud-based platform, lets users share reports and dashboards with colleagues inside and outside the company. Power BI's integration with Microsoft Teams and SharePoint simplifies data-driven project collaboration.

Tableau and Power BI's performance and scalability with large datasets and complex queries are also covered in the paper. The Hyper data engine in Tableau optimizes query performance, allowing users to analyze large datasets quickly. Hyper's ability to handle large volumes of data efficiently makes Tableau a suitable choice for organizations that require real-time analytics and high-performance visualizations. Power BI uses The Vertipaq engine for in-memory data processing. Vertipaq helps Power BI handle large datasets, but extremely large or complex data models may limit performance.

Finally, the paper discusses each tool's learning curve, which can influence organizations' decisions. Tableau's

easy-to-use interface and extensive online resources make it suitable for all technical levels. Mastering advanced features may require additional training or support. Power BI, with its integration into the Microsoft ecosystem, benefits from the familiarity many users have with Microsoft products, which can reduce the learning curve. Additionally, Power BI offers a range of training materials and community support, further easing the adoption process.

In conclusion, both Tableau and Power BI are powerful tools for data visualization, each with its own set of strengths and challenges. The choice between the two depends largely on the specific needs and existing infrastructure of the organization. Tableau may be better suited for organizations requiring advanced visualization capabilities and flexibility in data source integration, while Power BI is an excellent choice for those looking for seamless integration with Microsoft services and cost-effectiveness. By understanding the unique features and limitations of each platform, organizations can make informed decisions that enhance their data visualization strategies and ultimately drive better business outcomes.

KEYWORDS: *Data visualization, Tableau, Power BI, Business Intelligence, Data Analytics, Dashboards, Data-Driven Decision-Making, Visual Analytics*

Article History

Received: 12 Aug 2023 | Revised: 24 Aug 2023 | Accepted: 31 Dec 2023
