

ABSTRACT

Data visualization is a crucial component in dashboard creation because it allows users to quickly and effectively understand and analyze information. One of the most popular tools for creating data visualizations is Power BI. Power BI provides a wide range of charts and visualizations that help display data dynamically and interactively. With Power BI, users can integrate various data sources, create comprehensive reports, and easily share insights. Many organizations use Microsoft Excel for data storage and initial analysis, and Power BI seamlessly connects with Excel, allowing users to import data directly for further analysis and visualization.

Before data can be visualized, the data preprocessing process is essential. Preprocessing involves data cleaning, removing duplicates, handling missing values, and transforming data into the appropriate format. These steps ensure that the data used is accurate and reliable, making the resulting visualizations accurate and informative as well. Excel provides powerful tools for data preprocessing, such as sorting, filtering, and using formulas to clean and prepare data before importing it into Power BI.

In addition to Excel, the use of Python programming for data preprocessing is becoming increasingly popular. Python offers a variety of libraries, such as Pandas, NumPy, and Scikit-learn, which are highly efficient for data cleaning, transformation, and analysis. With Python, users can perform complex data operations more easily and flexibly, such as data normalization, dataset merging, and feature creation. Python also enables the automation of preprocessing tasks, which can save time and reduce the risk of manual errors.

Through effective visualization, dashboards become extremely useful tools for decision-making and performance monitoring. Power BI also supports interactive features such as filters, drill-downs, and hover-over information, allowing users to explore deeper details and gain richer insights without having to switch to raw data sources.

Thus, integrating effective data visualization into dashboards, especially with tools like Power BI, Microsoft Excel, and Python programming, can help organizations achieve their strategic goals by providing powerful tools for data analysis, reporting, and informed decision-making.

Keywords: *Data visualization, Dashboard, Power BI, Python, Microsoft Excel, Preprocessing*