Study of Big Data Visualization Software Tools Used By Businesses

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Abstract - Big Data visualization software tools are used to convert the big data in graphical format. As graphical representation is always easy to understand as compare to its equivalent textual or numerical information, such type of tools can be used by any business analyst to take right decision at right time. The ideas behind Big data visualization techniques is about converting data into pictures or graphical representation format so as the data can be process in more efficient manner. Data Analysis and Data Analytics are the key components of data visualization that allows analyst to manipulate data for making informed business decisions. Microsoft Excel, Microsoft Power BI, Tableau, Pandas and IBM Watson Analytics are some of the data visualization tools used by the business.

Keywords - Data visualization, Big Data, Data Analysis, Tableau, MS Power BI, Google Chart, Matplotlib

INTRODUCTION

"A picture is worth a thousand words." Big data visualization tools follow this fact. They are all about converting big data into graphical representation which makes it easy for decision-makers to take right decision at right time by analyzing large volume of data graphically. Data visualization is a technique of representing the big data in pictorial format which can be understood by person having little computer knowledge or non-analyst can also understand it. Big data is a term that describes the large volume of data. Big data is often characterized by the three Vs

Volume: Volume refers to the amount of data generated through websites, portals and online

Velocity: Velocity refers to the speed at which data are being generated and processed. For example, every day 900 million photos are uploaded on Face book, 0.4 million hours of video are uploaded on YouTube and 3.5 billion searches are performed in Google. Big Data helps the business to hold such continuously growing data, at the same time process it fast.

Varity: Data comes in different formats such as textual data, numeric data, audio-video data and image data and so on. Variety refers to the many types of data that are available. Big data allows storing such type of variety of data.

Through IoT millions of devices are interconnected, will trigger a massive inflow of Big Data. IoT devices generate continuous streams of data. Users must be able to handle this data and make it actionable. Big data analytics tools have the capacity to handle large volumes of data generated from IoT devices that create a continuous stream of information. The key challenge is visualizing and uncovering insights from various types of data. Existing Big Data technologies need to be augmented to effectively store, manage and extract value from continuous streams of sensor data.

For instance, it is estimated that connected cars will send 25 gigabytes of data to the cloud every hour. The biggest challenge will be to make sense of this data, identifying data that can be consumed and quickly acted upon to derive actionable events.

Big Data Visualization tools used by Business:

1. Tableau:

Tableau is the data visualization tool used by the business for visualizing and analyzing big data. Tableau is a Business Intelligence tool for visually analyzing the data. Users can create and distribute an interactive and shareable dashboard, which depict the trends, variations, and density of the data in the form of graphs and charts. Tableau can connect to files, relational and Big Data sources to acquire and process data. The software allows data blending and real-time collaboration, which makes it very unique. It is used by businesses, academic researchers, and many government organizations for visual data analysis. As a leading data visualization tool, Tableau has many desirable and unique features. As it does not require high level of programming expertise, any user with access to data can start using it to derive value from the data. Tableau does not need a complex software setup. The user explores and analyzes the data by using visual tools like colors, trend lines, charts, and graphs. Tableau allows you to blend different relational, semi structured and raw data sources in real time, without expensive up-front integration costs. Tableau works in all kinds of devices where data flows. Hence, the user need not worry about specific hardware or software requirements to use Tableau. You can save your view of data and allow colleagues to subscribe to your interactive dashboards so they see the very latest data just by refreshing their web browser. Tableau server provides a centralized location to manage all of the organization's published data sources.

The application's data visualizing quality is superior to what Tableau software competitors offer. It converts unstructured statistical information into comprehensive logical results, which are fully functional, interactive and appealing dashboards. The tool's intuitive manner of creating graphics and a user-friendly interface allow non-dev users to utilize the basic app's functionality to the fullest. Apart from its high visualization functionality, users rate its overall performance as robust and reliable. The software supports establishing connections with many data sources, such as HADOOP, SAP and DB Technologies, which improves data analytics quality and enables the creating of a unified, informative dashboard.

And the last one in our list of core Tableau benefits, there is an efficient mobile app available for IOS and Android. It adds mobility to Tableau users and allows them to keep statistics at their fingertips, as well as it supports full functionality that a Desktop and Online versions have.

2. Microsoft Power Bi:

Microsoft Power BI is a suite of business analytics tools from Microsoft primarily meant for analyzing data and sharing the insights. It enables you to explore and dig insights out of your data via any contrivance you utilize – desktops, tablets or smart phones

It helps you derive quick answers from the data and also can connect to on-premises data sources for real time mapping and analysis. Your data source or format won't be a limitation with Power BI as it lets you connect hundreds of sources such as streaming data, data on cloud services, excel spreadsheets and most other data file formats. Power BI is considered one of the best data visualization tools by industry experts and is being used across industries like finance, sales to operations. For basic requirements, the tool can even be used for free as it lets you analyze up to 1GB of data per user account without a paid subscription. Power BI is a cloud-based business analytics service. Within minutes you can visually perceive your data in an incipient way. Power BI is a Data Visualization and Business Astuteness implement that converts data from different data sources to interactive dashboards and BI reports. Power BI suite provides multiple software, connector, and accommodations - Power BI desktop, Power BI accommodation predicated on Saas, and mobile Power BI apps available for different platforms. These set of accommodations are utilized by business users to consume data and build BI reports.

Power BI accommodates a particular feature for printing dashboards, which can be handy in board meetings and analysis. It's a library of custom visualization. With Power BI, businesses can get data from basically anyplace. Share live reports and dashboards**.** Receive data-driven alerts for mobile insights**.** Create live, real-time data metric dashboards. View rich graphical visualizations from complex BI data. Dashboards, reports, and datasets are at the heart of Power BI. Users can engender personalized dashboards, which amalgamate on-premises and cloud-born data in a single view, sanctioning them to monitor their most consequential data enterprise wide and from all their business apps.The facility to facilely embed BI and analytics in the app to distribute interactive reports and geo-map visualizations empowered by Bing maps.The ability to connect to nearly any application or data sources. A few examples include Excel spreadsheets, GitHub, Mail Chimp, SharePoint, and Google Analytics. Power BI is simple to use. Even rudimental users will find it to have a short learning curve**.** Fast turnarounds and low costs.

3. Google Charts:

Google Charts is enhancing web applications by adding interactive charting capability. It supports a wide range of charts. Charts are drawn using SVG in standard browsers like Chrome, Firefox, Safari, and Internet Explorer. It is Compatibility with all major browsers and mobile platforms like android and IOS. Supports multitouch on touch screen based platforms like android and iOS. Ideal for iPhone/iPad and android based smart phones/ tablets. It is Open source and is free to use for non-commercial purpose.It is Simple Configurations. Allows modifying chart even after chart generation. DateTime support − Handle date time specially. Provides numerous inbuilt controls over date wise categories. External data − Supports loading data dynamically from server. Provides control over data using callback functions. Text Rotation − Supports rotation of labels in any direction

4. Matplotlib:

Visualization: encoding data using visual cues. Human brain can process information easily when it is in pictorial or graphical format. Matplotlib is a python library used to create 2D graphs and plots by using python scripts Matplotlib is a multiplatform data visualization library built on NumPy arrays, and designed to work with the broader SciPy stack. It was conceived by John Hunter in 2002, originally as a patch to IPython for enabling interactive MATLAB-style plotting via gnuplot from the IPython command line. Most important features is its ability to play well with many operating systems and graphics backends. It had a familiar interface: one similar to MatLab. It had a coherent vision: to do 2D graphics, and do them well. Matplotlib's powerful tools and ubiquity within the scientific Python world. The great success stories in the scientific Python world, the IPython Notebook. Matplotlib uses syntax familiar to MatLab user and ggplot. It has a module named pyplot which makes things easy for plotting by providing feature to control line styles, font properties, formatting axes. It supports a very wide variety of graphs and plots namely - histogram, bar charts, power spectra, violin plot, scatter plot, Hiding tricks, error charts, etc

Conclusion:

Exploring various visualization tools provide an insight for business across the world to be able to determine which software packages are worth investing the time and capital in to best prepare their opportunities. Meeting the market demand is very important to a business. We explored some of these tools, as well as the place each organization has within the data visualization space currently.

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