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## Big Data Visualization Tools for E-commerce Businesses

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### Abstract

Now a days, people prefer online, buying and selling of products. Many companies from startups to large businesses, having their own ecommerce website and earning benefits from it. Due to huge number of online transactions petabytes of data is generated and processed every day. This large amount of data is called as Big Data. Daily number of people visits to ecommerce website, some of them shop actually and some of them are just searching for the products, so website has large data which if observed properly can be beneficial for the ecommerce businesses to decide their strategies to improve the sales. Data visualization is a one of the most efficient and understandable method of data representation. It helps to analyze the customers need, also it gives valuable insights to decide the sales strategy and to improve the customer relationships, understand shoppers' buying behavior, and satisfy their needs. It is not just enough to process and analyze the data, but to present them in visual format is very important as human brain finds patterns or visuals more efficiently than the textual format. So, the data Visualization and Analytics plays important role in making proper decision in various sectors. By solving the big-data problem via visual means, it also tends to new opportunities in the visualization

domain. In this paper, How big data visualization is important for e-commerce businesses is discussed along with comparative analysis of different big data visualization tools.

### Keywords

Big Data, Bid Data Visualization, E-commerce Business, Data Visualization Tools.

### Introduction

A collection of large datasets which cannot be processed using traditional computing techniques is called Big Data. It is a subject which involves different tools, techniques and frameworks to manage the data in more analyzed form. Big Data includes large volume, high velocity, and extensible variety of data. The data in it can be of Structured, Semi Structured or Unstructured type. Big Data visualization allows a comprehensible visual representation of data patterns, enabling users to more easily glean insights from data. Data visualization is the act of taking data or information and placing it into a visual context, such as a map or graph. In Big Data visualization any type of data can be represented in a graphical format to make it more understandable. It is used for more complex representations like heat maps and fever charts than the typical corporate graphs, histograms and pie

charts. So, it enables the decision makers to explore data sets to identify correlations or unexpected patterns. As per the old saying: “a picture is worth a thousand words.” It is because, an image can often convey properly that what actually is going on, quickly, efficiently, and effectively than words. Big data visualization techniques are all about turning data into pictures by presenting data in pictorial or graphical format this makes it easy for decision-makers to take in vast amounts of data at a glance to "see" what is going on what it is that the data has to say.

Data visualizations make big and small data easier for the human brain to understand, and visualization also makes it easier to detect patterns, trends, and outliers in groups of data.

### Objectives:

- The main objective of Big Data visualization for E-commerce Businesses is to understand the significance of data and to communicate this information clearly and efficiently.
- To conceptualize and grasp large amounts of information.
- Instead of complex analytics for website it turn them into easy-to-read charts, graphs and tables anyone can read.
- These diagrams are not only important for understanding where strengths in your strategy lie, but also where there is room for improvement.
- These visuals can also be used to aid E-Commerce marketing promotions.

### Significance of Big Data Visualization for E-commerce Businesses

Visuals are important in marketing, period. Whether it's print or digital, images, graphics, charts and diagrams help make understanding and processing information easier for viewers. In fact, humans, as a species, are visual learners and

process visuals 60,000 times faster than text. Additionally, a team of neuroscientists at MIT discovered the human brain can process images that the eyes see in under 13 milliseconds.

Big Data visualization is not the only way for decision makers to analyze data, but Big Data visualization techniques offer a fast and effective way to:

**Review large amounts of data** – data presented in graphical form enables decision makers to take in large amounts of data and gain an understanding of what it means very quickly – far more quickly than poring over spreadsheets or analyzing numerical tables.

**Spot trends** – time-sequence data often captures trends, but spotting trends hidden in data is notoriously hard to do – especially when the sources are diverse and the quantity of data is large. But the use of appropriate Big Data visualization techniques can make it easy to spot these trends, and in business terms a trend that is spotted early is an opportunity that can be acted upon.

**Identify correlations and unexpected relationships** – One of the huge strengths of Big Data visualization is that enables users to explore data sets – not to find answers specific questions, but to discover what unexpected insights the data can reveal. This can be done by adding or removing data sets, changing scales, removing outliers, and changing visualization types. Identifying previously unsuspected patterns and relationships in data can provide businesses with a huge competitive advantage.

**Present the data to others** – An oft-overlooked feature of Big Data visualization is that it provides a highly effective way to communicate any insights that it surfaces to others. That's because it can convey meaning very quickly and in a way that it is easy to understand: precisely what is needed in both internal and external business presentations.

### Big Data Visualization Tools

A quick survey of the Big Data tools marketplace reveals the presence of big names including Microsoft, SAP, IBM and SAS. But there are plenty of specialist software vendors offering leading big data visualization tools, and these include Tableau Software, Qlik and TIBCO Software.

Leading data visualization products include those offered by:[1]

**Zoho Analytics:** Focusing on ease of use – a particularly key attribute as data tools grow – Zoho analytics is a self service option. Meaning that users will not need the assistance of IT staff or professional data scientists to glean insight from data.

**IBM Cognos Analytics:** Driven by their commitment to Big Data, IBM’s analytics package offers a variety of self service options to more easily identify insight.

**QlikSense and QlikView:** The Qlik solution touts its ability to perform the more complex analysis that finds hidden insights.

**Microsoft PowerBI:** The Power BI tools enables you to connect with hundreds of data sources, then publish reports on the Web and across mobile devices.

**Oracle Visual Analyzer:** A web-based tool, Visual Analyzer allows creation of curated dashboards to help discover correlations and patterns in data.

**SAP Lumira:** Calling it “self service data visualization for everyone,” Lumira allows you to combine your visualizations into storyboards.

**SAS Visual Analytics:** The SAS solution promotes its “scalability and governance,” along with dynamic visuals and flexible deployment options.

**Tableau Desktop:** Tableau’s interactive dashboards allow you to “uncover hidden insights on the fly,” and power users can manage metadata to make the most of disparate data sources.

**TIBCO Spotfire:** Offers analytics software as a service, and touts itself as a solution that “scales from a small team to the entire organization.”

**Google Charts:** are free, simple and customizable. You can create tree charts, scatter plots and, best of all, when you’re done creating your visual data, you can embed the information on your website for desktop or mobile viewing.

**Plotly:** is another free open source tool that allows data scientists to showcase information in a beautiful way. This platform is also great for sharing and collaborating with other team members because you can export your plot in a ton of different formats, such as a static image, HTML file, Excel file, or a CSV.

**Infogram** helps its users create data that dazzles. With hundreds of infographic options, Infogram makes data storytelling easy.

**Leaflet** is an easy-to-use customizable map maker. You can add markers, text or vector images to spice up your map, and its plugins make Leaflet as lightweight as possible.

## Various Big Data visualization examples[1]

**Linear:** Lists of items, items sorted by a single feature.

**2D/Planar/geospatial:** Cartograms, dot distribution maps, proportional symbol maps, contour maps.

**3D/Volumetric:** 3D computer models, computer simulations

**Temporal:** Timelines, time series charts, connected scatter plots, arc diagrams, circumplex charts.

**Multidimensional:** Pie charts, histograms, tag clouds, bar charts, tree maps, heat maps, spider charts.

**Tree/hierarchical:** Dendograms, radial tree charts, hyperbolic tree charts.

## The challenges of Big Data Visualization:

Big Data visualization can be an extremely powerful business capability, but before an organization can take advantage of it some key issues need to be addressed. These include:[1]

**Availability of visualization specialists:** Many Big Data visualization tools are designed to be easy enough for anyone in an organization to use, often suggesting appropriate Big Data visualization examples for the data sets under analysis. But to get the most out of some tools it may be necessary to employ a specialist in big data visualization techniques who can select the best data sets and visualization styles to ensure the data is exploited to the maximum.

**Visualization hardware resources:** Under the hood, Big Data visualization is essentially a computing task, and the ability to carry out this task quickly – to enable organizations to make decisions in a timely manner using real-time data – may require powerful computer hardware, fast storage systems, or even a move to cloud. That means Big Data visualization initiatives are as much an IT project as a management project.

**Data quality:** The insights that can be drawn from Big Data visualization are only as accurate as the data that is being visualized: if it is inaccurate or out of date then the value of any insights is questionable. That means people and processes need to be put in place to manage corporate data, metadata, data sources, and any transformations or data cleaning that are performed before storage.

## Conclusion:

Information is crucial in one way or the other, so to find useful patterns one has to rely on the visual representation. Huge volume of heterogeneous data cannot be handled efficiently, so the tools which give us result without giving up performance and response time are required. In the competitive era of Ecommerce businesses, one must need the effective way to show the data and information to the people so as to survive in the digital era with good business. Finding the best tool for analyzing and representing data so that E-commerce business will get benefit to attract sound amount of crowd on their websites for doing business.

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