

A review on Big Data Analytics

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Abstract— Big data analytics is the process of examining large data sets to uncover hidden patterns, unknown correlations, market trends, customer preferences and other useful business information. The analytical findings can lead to more effective marketing, new revenue opportunities, better customer service, improved operational efficiency, competitive advantages over rival organizations and other business benefits. In this paper, a review on big data analytics about what it is and why it matters.

IndexTerms— Introduction, History, Importance, Types of Organizations, Works and Key Technologies, Advantages

I. Introduction

Big data is mostly generated from social media websites, sensors, devices, video/audio, networks, log files and web, and much of it is generated in real time and on a very large scale. Big data analytics is the process of examining this large amount of different data types, or big data, in an effort to uncover hidden patterns, unknown correlations and other useful information.

II. History and evolution of big data analytics

The concept of big data has been around for years; most organizations now understand that if they capture all the data that streams into their businesses, they can apply analytics and get significant value from it. But even in the 1950s, decades before anyone uttered the term “big data,” businesses were using basic analytics (essentially numbers in a spreadsheet that were manually examined) to uncover insights and trends.

The new benefits that big data analytics brings to the table, however, are speed and efficiency. Whereas a few years ago a business would have gathered information, run analytics and unearthed information that could be used for future decisions, today that business can identify insights for immediate decisions. The ability to work faster – and stay agile – gives organizations a competitive edge they didn't have before.

III. Importance of big data analytics

Big data analytics helps organizations harness their data and use it to identify new opportunities. That, in turn, leads to smarter business moves, more efficient operations, higher profits and happier customers. In his report *Big Data in Big Companies*, IIA Director of Research Tom Davenport interviewed more than 50 businesses to understand how they used big data. He found they got value in the following ways:

Cost reduction. Big data technologies such as Hadoop and cloud-based analytics bring significant cost advantages when it comes to storing large amounts of data – plus they can identify more efficient ways of doing business.

Faster, better decision making. With the speed of Hadoop and in-memory analytics, combined with the ability to analyze new sources of data, businesses are able to analyze information immediately – and make decisions based on what they've learned.

New products and services. With the ability to gauge customer needs and satisfaction through analytics comes the power to give customers what they want. Davenport points out that with big data analytics, more companies are creating new products to meet customers' needs.

IV. Types of organizations

Travel and hospitality

Keeping customers happy is key to the travel and hotel industry, but customer satisfaction can be hard to gauge – especially in a timely manner. Resorts and casinos, for example, have only a short window of opportunity to turn around a customer experience that's going south fast. Big data analytics gives these businesses the ability to collect customer data, apply analytics and immediately identify potential problems before it's too late.

Health care

Big data is a given in the health care industry. Patient records, health plans, insurance information and other types of information can be difficult to manage – but are full of key insights once analytics are applied. That's why big data analytics technology is so important to health care. By analyzing large amounts of information – both structured and unstructured – quickly, health care providers can provide lifesaving diagnoses or treatment options almost immediately.

Government

Certain government agencies face a big challenge: tighten the budget without compromising quality or productivity. This is particularly troublesome with law enforcement agencies, which are struggling to keep crime rates down with relatively scarce

resources. And that's why many agencies use big data analytics; the technology streamlines operations while giving the agency a more holistic view of criminal activity.

Retail

Customer service has evolved in the past several years, as savvy shoppers expect retailers to understand exactly what they need, when they need it. Big data analytics technology helps retailers meet those demands. Armed with endless amounts of data from customer loyalty programs, buying habits and other sources, retailers not only have an in-depth understanding of their customers, they can also predict trends, recommend new products – and boost profitability.

V. Works and key Technologies

There's no single technology that encompasses big data analytics. Of course, there's advanced analytics that can be applied to big data, but in reality several types of technology work together to help you get the most value from your information. Here are the biggest players:

Data management. Data needs to be high quality and well-governed before it can be reliably analyzed. With data constantly flowing in and out of an organization, it's important to establish repeatable processes to build and maintain standards for data quality. Once data is reliable, organizations should establish a master data management program that gets the entire enterprise on the same page.

Data mining. Data mining technology helps you examine large amounts of data to discover patterns in the data – and this information can be used for further analysis to help answer complex business questions. With data mining software, you can sift through all the chaotic and repetitive noise in data, pinpoint what's relevant, use that information to assess likely outcomes, and then accelerate the pace of making informed decisions.

Hadoop. This open source software framework can store large amounts of data and run applications on clusters of commodity hardware. It has become a key technology to doing business due to the constant increase of data volumes and varieties, and its distributed computing model processes big data fast. An additional benefit is that Hadoop's open source framework is free and uses commodity hardware to store large quantities of data.

In-memory analytics. By analyzing data from system memory (instead of from your hard disk drive), you can derive immediate insights from your data and act on them quickly. This technology is able to remove data prep and analytical processing latencies to test new scenarios and create models; it's not only an easy way for organizations to stay agile and make better business decisions, it also enables them to run iterative and interactive analytics scenarios.

Predictive analytics. Predictive analytics technology uses data, statistical algorithms and machine-learning techniques to identify the likelihood of future outcomes based on historical data. It's all about providing a best assessment on what will happen in the future, so organizations can feel more confident that they're making the best possible business decision. Some of the most common applications of predictive analytics include fraud detection, risk, operations and marketing.

Text mining. With text mining technology, you can analyze text data from the web, comment fields, books and other text-based sources to uncover insights you hadn't noticed before. Text mining uses machine learning or natural language processing technology to comb through documents – emails, blogs, Twitter feeds, surveys, competitive intelligence and more – to help you analyze large amounts of information and discover new topics and term relationships.

VI. Advantages of big data analysis

Big data analysis allows market analysts, researchers and business users to develop deep insights from the available data, resulting in numerous business advantages. Business users are able to make a precise analysis of the data and the key early indicators from this analysis can mean fortunes for the business. Some of the exemplary use cases are as follows:

- Whenever users browse travel portals, shopping sites, search flights, hotels or add a particular item into their cart, then Ad Targeting companies can analyze this wide variety of data and activities and can provide better recommendations to the user regarding offers, discounts and deals based on the user browsing history and product history.
- In the telecommunications space, if customers are moving from one service provider to another service provider, then by analyzing huge call data records of the various issues faced by the customers can be unearthed. Issues could be as wide-ranging as a significant increase in the call drops or some network congestion problems. Based on analyzing these issues, it can be identified if a telecom company needs to place a new tower in a particular urban area or if they need to revive the marketing strategy for a particular region as a new player has come up there. That way customer churn can be proactively minimized.

VIII Conclusion

Analysis of Big Data is characterized by use of real time information and very large sets of information from disparate sources. Much of the relevant data is unstructured or only semi-structured, and will often lack originality, and even meaning, without the work of the data analyst to extract insights. On the one hand we have raw data with little form and little meaning, and on the other, immense value when it is combined with other data sources and advanced techniques of evaluation. It is entirely possible that after evaluation, a new structured data set may also be created which contains the real insights, and which although highly valuable, may be simply expressed.

REFERENCES

- [1] Seema Acharya, Subhashini Chellappan. "Big data and analytics" . Wiley India Pvt. Ltd (2015)..
- [2] Arvind Sathi. "Big data analytics" . Kindle edition.
- [3]Parag Kulkarni, Sarang Joshi,, Meta S. Brown "Big data and analytics"PHI Learning Pvt. Ltd.,(2016).

