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BIG DATA ANALYTICS –ITS BUSINESS APPLICATIONS

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Abstract
Big data usually includes data sets with sizes beyond the ability of commonly used software tools to capture, curate, manage, and process data within a tolerable elapsed time. Big data "size" is a constantly moving target, as of 2012 ranging from a few dozen terabytes to many petabytes of data. Big data is a set of techniques and technologies that require new forms of integration to uncover large hidden values from large datasets that are diverse, complex, and of a massive scale.

Thus, Big data, refers to the data sets that are too big to be handled using the existing database management tools, are emerging in many important applications, such as Internet search, business informatics, social networks, social media, genomics, and meteorology. Big data presents a grand challenge for database and data analytics research.

Big data analytics is the process of examining large data sets containing a variety of data types i.e., big data 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. ***The present paper elucidates the concept of Big data analytics and also focuses on its application in the area of business operations.***

Key Words: Big Data Analytics, Model, Benefits, Business Applications.

1. INTRODUCTION

Big data analytics is the process of examining big data to uncover hidden patterns, unknown correlations and other useful information that can be used to make better decisions. With big data analytics, data scientists and others can analyze huge volumes of data that conventional analytics and business intelligence solutions can't touch. The organization could accumulate billions of rows of data with hundreds of millions of data combinations in multiple data stores and abundant formats. High-performance analytics is necessary to process that much data in order to figure out what's important and what isn't.

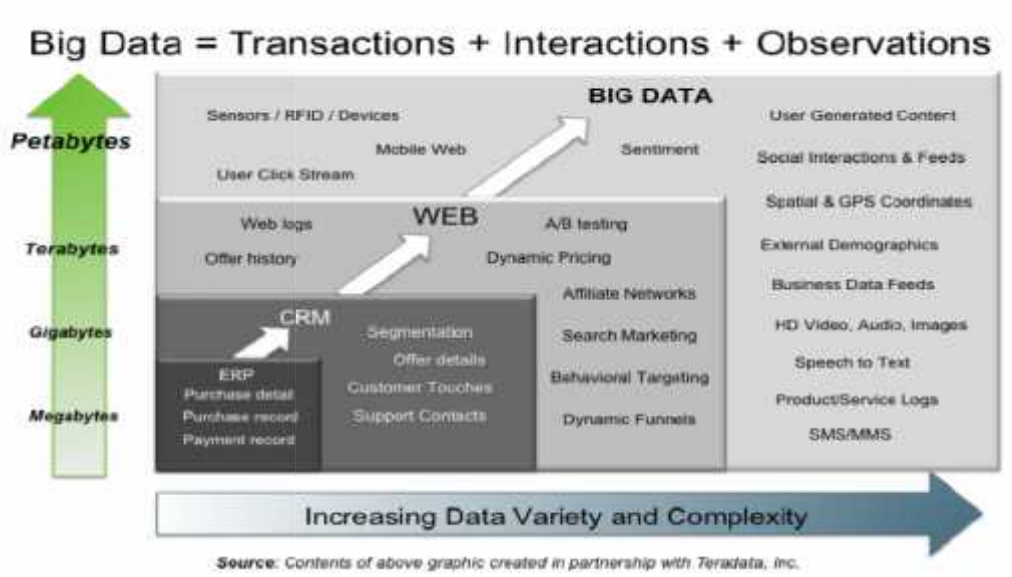
Using high-performance data mining, predictive analytics, text mining, forecasting and optimization on big data enables to continuously drive innovation and make the best possible decisions. In addition, organizations are discovering that the unique properties of machine learning are ideally suited to addressing their fast-paced big data needs in new ways.

Big data can be analyzed with the software tools commonly used as part of advanced analytics disciplines such as predictive analytics, data mining, text analytics and statistical analysis. Mainstream software and data visualization tools can also play a role in the analysis process. But the semi-structured and unstructured data may not fit well in traditional data warehouses based on relational databases. Furthermore, data warehouses may not be able to handle the processing demands posed by sets of big data that need to be updated frequently or even continually -- for example, real-time data on the performance of mobile applications or of oil and gas pipelines. As a result, many organizations looking to collect, process and analyze big data have turned to a newer class of technologies that includes Hadoop and related tools such as YARN, MapReduce, Spark, Hive and Pig as well as NoSQL databases. Those technologies form the core of an open source software framework that supports the processing of large and diverse data sets across clustered systems.

The primary goal of big data analytics is to help companies make more informed business decisions by enabling data scientists, predictive modelers and other analytics professionals to analyze large volumes of transaction data, as well as other forms of data that may be untapped by conventional business intelligence programs. That could include Web server logs and Internet click stream data, social media content and social network activity reports, text from customer emails and survey responses, mobile-phone call detail records and machine data captured by sensors connected to the Internet of Things Big data is now a reality, the volume, variety and velocity of data coming into the organization continue to reach unprecedented levels. This phenomenal growth means that not only that organization understands big data in order to decipher the information that truly counts, but also it should understand the possibilities of big data analytics.

1. a. Meaning of Big Data Analytics Big Data analytics is the practice of iterative, methodical exploration of an organization's data with emphasis on statistical analysis. Business analytics is used by companies committed to data-driven decision making. The concept of Big data can be understood from the following diagram.

Diagram: 1 – Concept of Big data Analytics



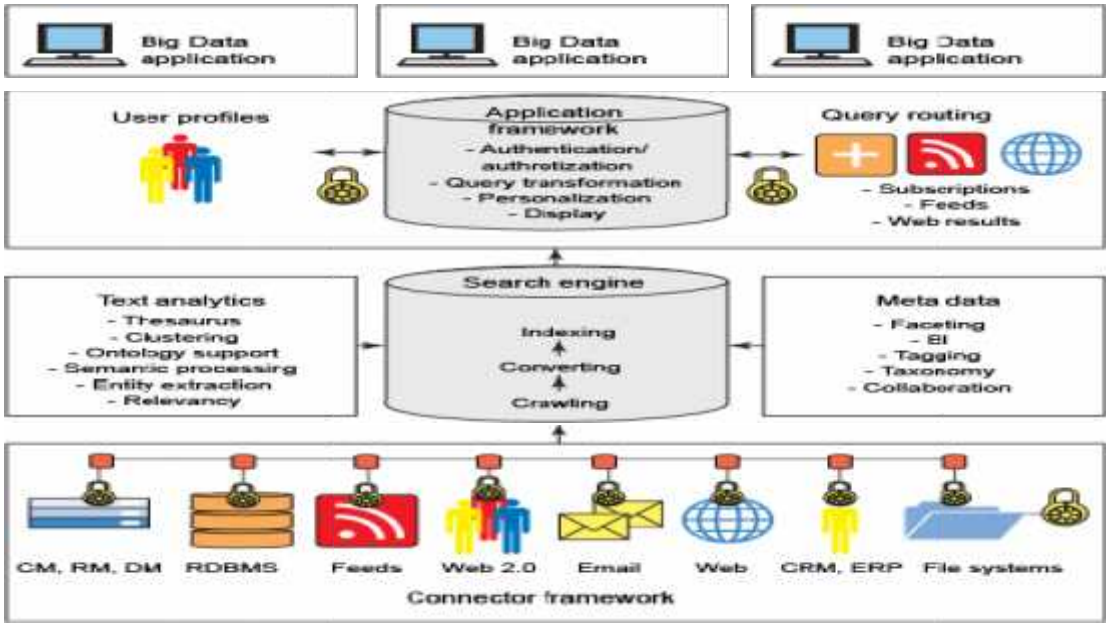
***Source**: Contents of above graphic created in partnership with Teradata, Inc.*

1. b. Big data Analytics Model

Big data can be described by the following characteristics-

- **Volume:** The quantity of generated and stored data. The size of the data determines the value and potential insight- and whether it can actually be considered big data or not.
- **Variety:** The type and nature of the data. This helps people who analyze it to effectively use the resulting insight.
- **Velocity:** In this context, the speed at which the data is generated and processed to meet the demands and challenges that lie in the path of growth and development.
- **Variability;** Inconsistency of the data set can hamper processes to handle and manage it.
- **Veracity:** The quality of captured data can vary greatly, affecting accurate analysis.

Diagram:2 –Big data Analytics Model



1. c. Types of Big data Analytics

- Decisive analytics: supports human decisions with visual analytics the user models to reflect reasoning.
- Descriptive Analytics: Gains insight from historical data with reporting, scorecards, clustering etc.
- Predictive analytics: uses statistical and machine learning techniques
- Prescriptive analytics: recommends decisions using optimization, simulation etc.

2. BENEFITS OF BIG DATA ANALYTICS

Using high-performance data mining, predictive analytics, text mining, forecasting and optimization on big data enables you to continuously drive innovation and make the best possible decisions. In addition, organizations are discovering that the unique properties of machine learning are ideally suited to addressing their fast-paced big data needs in new ways.

Big Data analytics benefits an organization in several ways

i. Creating Smarter, Leaner Organizations

A well thought out and executed Big Data and analytics strategy ultimately makes organizations smarter and more efficient. Today, Big Data is being leveraged in many industries from criminal justice to health care to real estate with powerful outcomes. The same common sense approach to Big Data should be employed by organizations desiring similar results.For example, *HBR* reports that the New York City Police Department (NYPD) uses Big Data technology "to geolocate and analyze 'historical arrest patterns' while cross-tabbing them with sporting events, paydays, rainfall, traffic flows, and federal holidays." Essentially, the NYPD is utilizing data patterns, scientific analysis, and technological tools to do their job and to do it to the best of their ability. Using a Big Data and analytics strategy, the NYPD was able to identify crime "hot spots." From there, they deployed officers to locations where crimes were likely to occur before the crimes were actually committed.

The same logic is being applied to economic forecasting. For example, the number of Google queries about housing and real estate from one quarter to the next turns out to predict more accurately what's going to happen in the housing market than any team of expert real estate forecasters.

The question before the organizations are how can Big Data and analytics be similarly leveraged by them to get powerful results.

ii. Equipping an Organization to have Cross-Channel Conversations

Big data analytics builds the technical infrastructure to support dynamic, cross-channel conversations with customers is absolutely necessary for organizational impact i.e, it is simply not possible to manage the delivery of dynamic, targeted, consistent content, offers, and products, across digitally enabled customer touch points when marketing tasks are semi automated with a series of un integrated software tools.

iii. Preparing an Organization for the Inevitable Future

The digitization of all customer-facing organizational systems from customer service to sales to marketing. Big data analytics are necessary to bring structural changes within an organization like reversals, to quote one was in the newspaper industry that moved from booming to near obsolete with the advent of online publishing. This happened within a decade. The second reversal was in the recording/music industry that moved from booming CD sales to obsolete with the advent of digital music. This also happened within a decade. Both reversals were gradual until they were sudden.

These are both great examples of the gradual takeover that Big Data management tools are having within the marketing teams and departments of every organization today. From the smallest mom and pop shop to the largest, international organizations, organizations that resist the scientific and systematic approach to data analysis, online advertising, and more will become obsolete. Fortunately, the shift is a gradual and organizations need the warning before it is too late.

3. Business applications of Big data Analytics

Big Data is big business, with IDC forecasting that the Big Data technology market will grow at a 27% compound annual growth rate (CAGR) to $32.4 billion through 2017. As Big Data adoption continues to grow, it will become increasingly important to competitiveness for enterprises large and small, across all verticals.

i. Fraud detection

For businesses whose operations involve any type of claims or transaction processing, fraud detection is one of the most compelling Big Data application examples. Historically, fraud detection on the fly has proven an elusive goal. In most cases,

fraud is discovered long after the fact, at which point the damage has been done and all that's left is to minimize the harm and adjust policies to prevent it from happening again. Big Data platforms that can analyze claims and transactions in real time, identifying large-scale patterns across many transactions or detecting anomalous behavior from an individual user, can change the fraud detection game.

ii. **IT Log Analytics**

IT solutions and IT departments generate an enormous quantity of logs and trace data. In the absence of a Big Data solution, much of this data must go unexamined and usually organizations simply don't have the manpower or resource to churn through all that information by hand, let alone in real time. With a Big Data solution in place, however, those logs and trace data can be put to good use. Within this list of Big Data application examples, IT log analytics is the most broadly applicable. Any organization with a large IT department will benefit from the ability to quickly identify large-scale patterns to help in diagnosing and preventing problems. Similarly, any organization with a large IT department will appreciate the ability to identify incremental performance optimization opportunities.

iii. Call Center Analytics

Another area of Big Data application examples is the one customer-facing, of which call center analytics are particularly powerful. What's going on in a customer's call center is often a great barometer and influencer of market sentiment, but without a Big Data solution, much of the insight that a call center can provide will be overlooked or discovered too late. Big Data solutions can help identify recurring problems or customer and staff behavior patterns on the fly not only by making sense of time/quality resolution metrics, but also by capturing and processing call content itself.

iv. Social Media Analysis

Analysis of social media activity can be discussed as an example of big data application. Everyone is on social media these days, once they "like" company pages on Face book or tweeting complaints about products on Twitter. Big Data solutions built to harvest and analyze social media activity, like IBM's Cognos Consumer Insights, a point solution running on IBM's BigInsights Big Data platform, can make sense of the chatter. Social media can provide real-time insights into how the market is responding to products and campaigns. With those insights, companies can adjust their pricing, promotion, and campaign placement for optimal results.

These are just a few real-world Big Data application examples. Individual industries and verticals will have their own uses.

4.CONCLUSIONS

Many people view "big data" as an over-hyped buzzword. It is, however, a useful term because it highlights new data management and data analysis technologies that enable organizations to analyze certain types of data and handle certain types of workload that were not previously possible. The actual technologies used will depend on the volume of data, the variety of data, the complexity of the analytical processing workloads involved, and the responsiveness required by the business. It will also depend on the capabilities provided by vendors for managing, administering, and governing the enhanced environment. These capabilities are important selection criteria for product evaluation.

Big data, however, involves more than simply implementing new technologies. It requires senior management to understand the benefits of smarter and more timely decision making. It also requires business users to make pragmatic decisions about agility requirements for analyzing data and producing analytics, given tight IT budgets. The good news is that many of the technologies outlined in this article not only support smarter decision making, but also provide faster time to value.

REFERENCES

1. Babaguchi, N., & Nakashima, Y. (2015). Protection and Utilization of Privacy Information via Sensing. IEICE TRANSACTIONS on Information and Systems, 98(1), 2-9.
2. Shin, D. H., & Min, J. C. (2015). Views of big data: Perspectives and Issues. Telematics & Informatics, 32, 311–320.
3. Chandrasekhar, U., Reddy, A., & Rath, R. (2013, April). A comparative study of enterprise and open source big data analytical tools. In Information & Communication Technologies (ICT), 2013 IEEE Conference on (pp. 372-377). IEEE.
4. Big Data & Advanced Analytics, report McKinsey Global Institute,2015
5. Big Data: A new competitive advantage, by Tim McGuire, 2013.