

## Big Data: Deriving Business Value by leveraging Customer Intelligence

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**Abstract**—Businesses are approaching times where ‘Customer Experience’ and ‘Customer Experience Management’ (CEM) are taking the center stage for planning of marketing and business strategies. When we talk of big data Analytics helping to improve Business Intelligence, it all comes down to Customer Intelligence. Not only how to improve services and products, but how to provide customized services for customers. Customer-centric organizations and businesses have a definite advantage over their counterparts who are investing in traditional product-centric values. There is an increasing consensus among the business communities that using and relying on big data analytics is going to be an indispensable and integral part of developing Business Intelligence. Big data Analytics are helping businesses with millions of customers to identify individual customer needs by bringing unstructured data into fold. This paper is aimed to examine the facet of how Big Data Analytics is being used to gain better insights into Customer Intelligence and helping organizations make better Business decisions to gain competitive advantage.

**Keywords:** *Big Data, Data Analytics, Customer Analytics, Customer Intelligence, Customer-Centric.*

### I. INTRODUCTION

For almost last two decades’ data models being used to work with data, was in a structured way using the transactional database model. Big Data has changed that computational environment. When Big Data is described, the characteristics like, volume, variety, velocity and veracity are what distinguish it from the traditional data that was being used earlier. The concept of Big Data in itself is a mixture of different areas from which data needs to be collected, processed, interpreted and insights obtained. Using data analytics and its specific advantages is vital to building businesses that are aimed at being customer-centric.

**How important is big data to your ability to develop and execute customer-centric programs?**

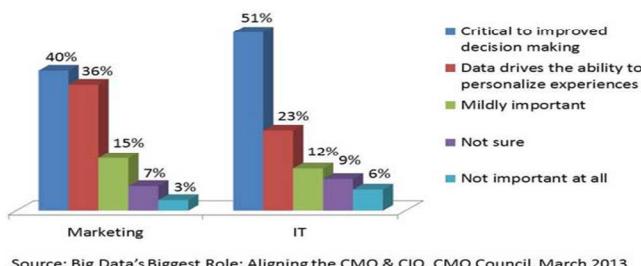


Fig. 1. Big Data's Biggest Role

B. Taylor, describes Big data as a technology that is disruptive and is influencing the way enterprises are trying to obtain insight into the most important revenue and profit

producing entity, the customer [1]. Agreeing to a study by the CMO Council [2], Big Data is important to achieving ethos, for an enterprise, that are customer-centric (Fig.1).

### II. BACKGROUND

There is an enormous amount of data getting generated from varied sources. Customers as well as businesses are generating data from numerous activities taking place. This data comes from social media, web logs, transaction and mobile data, product usage, sensors, digital media posted online, POS data and online purchases. More and more data related to consumer is getting generated in shrinking time-frames due to cloud services and internet enabled devices becoming cheaper by the day, making it affordable and extensively used in turn creating a hyper connected world from just a connected one [3].

There has been extensive research and discussions about the ‘Big Data: Hype vs Reality’ topic and there are no two opinions about the assertion that Big Data Analytics can be used to substantially improve just about any part of an organization or a business, including customer relationship. Services and products that are meaningful and exclusive can be developed from the data available with companies, in any industry, that understands the possibilities of exploiting the world of Big Data and is willing to actuate the same [4].

The key findings of a survey conducted by MIT Sloan Management Review in partnership with IBM Institute for Business Value [5], reveal that organizations that make use of Analytics are poised to perform about five times better

than those companies that do not use analytics and tend to apply intuition for making decisions.(Fig. 2).

Big Data not only means increased volumes of data, but also completely new environments from which the data is getting generated. This is a heterogeneous mix of data, spread across multiple silos and systems. Traditional

database systems are incapable of managing this information. This has resulted in multitude of challenges associated with turning big data into viable insights and also an eruption of new techniques and terms to accommodate the new trends in data science field which has taken on a new aspect with the emergence of big data.

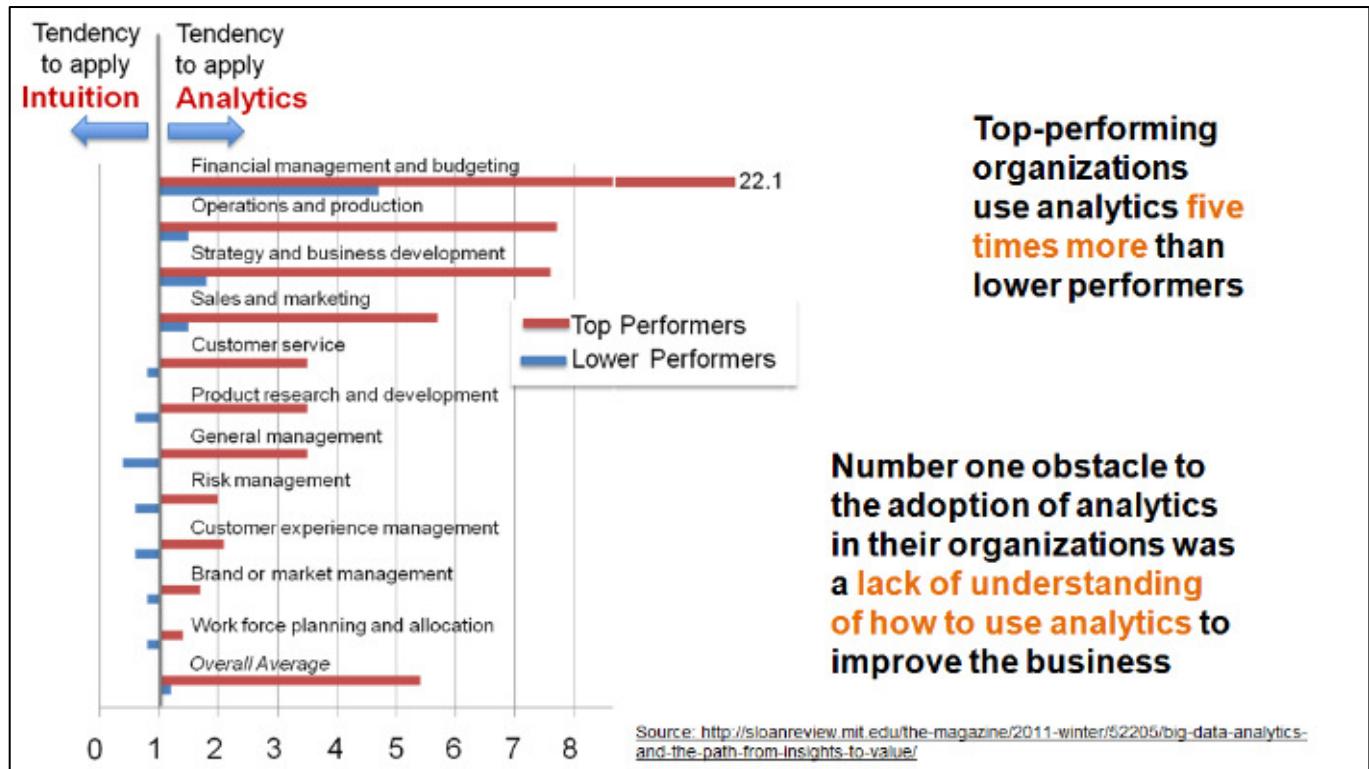


Fig. 2. Big Data Analytics: Paths from Insight to value

### III. METHODOLOGY

In an emerging field like Big Data where there is still a lot of new research happening every day, we aim to contribute to this evolving topic by identifying some of the areas which have a lot of research scope and have not been specifically researched extensively. We have used literature review methodology, however, reports from leading industry research firms such as Gartner, McKinsey etc. were also evaluated.

For research topics that are new and emerging, this approach has been suggested [6]. The study focuses on the aspect of Customer Analytics within the broader topic of Advanced Data Analytics.

### IV. FINDINGS

#### Value from Big Data Analytics

Clive Humby describes Data as the new oil. He says that, Data like crude oil is valuable, but cannot be really used if unrefined, at the same time suggesting its immense value if refined for specific purposes.[7].

Big Data has evolved from being a faddish buzzword to a cannot-be-ignored, relevant, opportunity providing system in itself.

Having this enormous amount[8](Fig. 3) of disparate data [9](Fig. 4), getting the required information and interpreting that information in the desired way is what businesses are focusing on so that they can leverage it to extract value for business.

Offering customers better and exclusive experiences are driving the customer focused companies to look for business

intelligent solutions through innovative technologies that gives their company an edge. The data and its diversity are getting generated in copious amounts as a result of the phenomenon of Big Data[10].

Data is being generated at an exponential rate from various sources. Data has been getting generated at large rates since 1970's and isn't in itself a new trend. What is new is the speed at which the data is getting generated and also the variety of data i.e. different types of data from various sources and with that the initiative and eagerness of businesses to make use of the data to transform and improve their working.[11].

There is a plethora of data available for companies to access and use. But only acquiring or storing large volumes of data in itself has no meaning. 'Size is irrelevant; infrastructure-scale problems have largely been solved. What's important is what the companies can do with the data. Storing vast amounts of data in an extremely efficient manner does not benefit an enterprise if they are not using that data to generate insights that drive marketing and business decisions' [12].

### Across sectors, companies in the U.S. Store at least 100 Terabytes of data – many have over 1

*Average stored data per firm with more than 1,000 employees (Terabytes, 2009)*

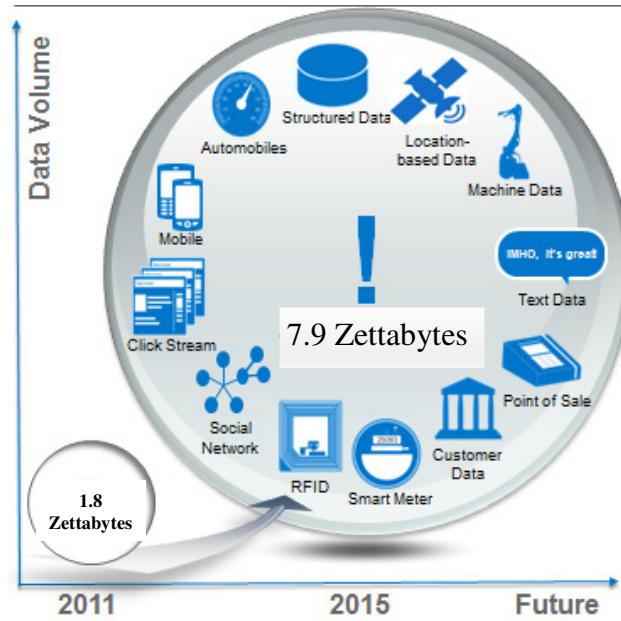


*Fig. 3. Average data stored per firm with more than 1000 employees*

Data Analytics have been used since long to gain insights into data, in turn helping companies improve .

Business Intelligence. But what has changed for data analytics with emergence of big data is not only the increased Volume to be analyzed but more importantly, the characteristics: Variety & Velocity that also need to be addressed to comprehend the full potential of big data analytics and benefit from it.

Customer Intelligence is a facet that is still developing as there are a number of aspects that are coming to fore with use of big data. Advanced analytics can be used by



*Fig. 4. Big Data sources*

companies to tap into this aspect to better understand the behavior pattern of clients or customers.

For getting results from analytics that are new and unique, new types of data and methods of analytics need to be implemented to get novel insights for Business Intelligence[13]. While much of the latest press coverage focuses on the potential of big data to boost revenue, experts suggest taking a different view through the eyes of the customer. Otherwise, they'll put themselves in jeopardy of losing, rather than gaining, new business[14].

Companies are using various tools, techniques and strategies for big data Analytics. Various customer analytic strategies are adapted by organizations depending on the service or products that are being offered.

Terminologies like CRM (Customer Relationship Management), 'Customer Lifetime Value', customer intelligence, customer engagement, customer churn, customer retention etc. have taken a new life and meaning with availability of Big Data. Most enterprises have access only to 'classic enterprise data' and as a result, they have a

Customer segmentation and targeting analytics are being used to provide satisfactory customer services not only as customer groups but also as individuals. Associating aspects like positioning, segmentation and targeting is part of the process of 'Target marketing' which can be realized well with analytics.[17].

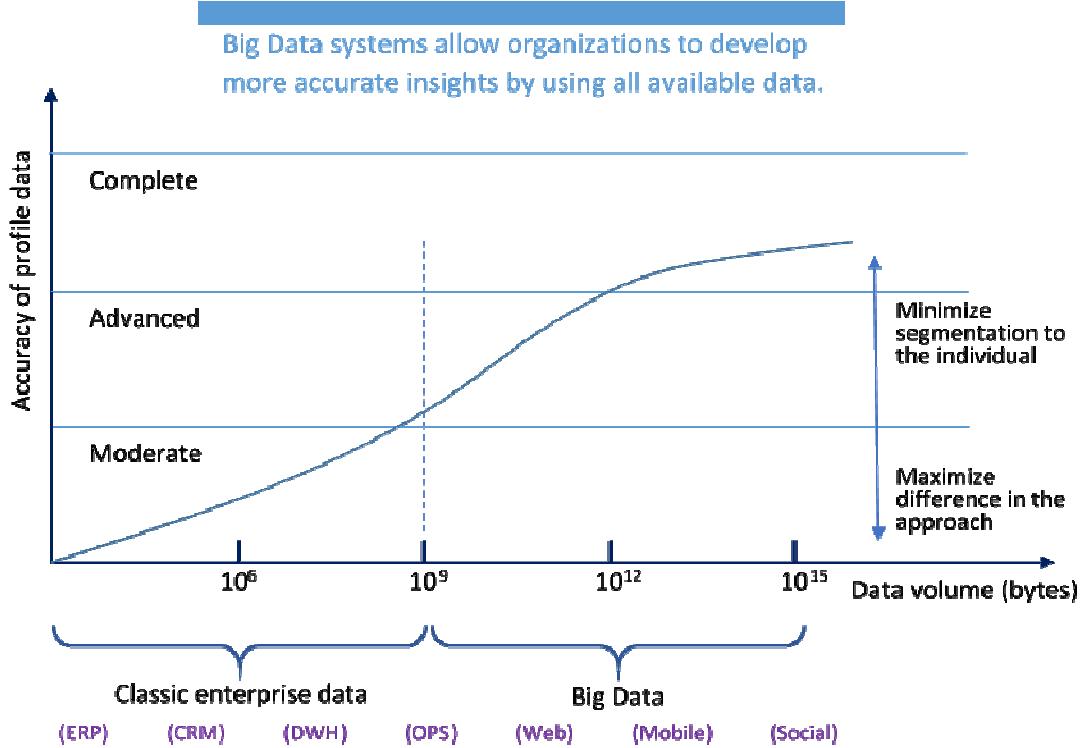


Fig. 5. The Big Data Paradigm

very limited/ inaccurate view of the consumer. As enterprises are able to tap data from other sources such as operations, web, social and mobile they gain a more complete view of the consumer. The better consumer view and insights allow companies one-to-one marketing and delivering personalized offers to drive revenues [15] (Fig. 5). Emphasizing the importance of large volumes of data, regardless of how diverse or unorganized it is, P.Russo, of TWI asserts that even data that might seem ambiguous, can be analyzed and taken advantage of, by using techniques and modern tools for advanced analytics which can be used with data from a raw source that is of poor quality or is not of a required standard.[13].

Some of the popular strategies used by companies include: Insights-Driven retail merchandizing: Decisions and informed resolutions can be made regarding pricing, individual or group promotions and assortment strategies which can be planned successfully [16].

Ubiquitous CRM is making news as: 'Data available, anytime & anywhere'. Ubiquitous computing is the heart of 'Internet of Things' technology, where objects are embedded with small microchips that can communicate wirelessly. These microchips are enabled to provide the embedded object with capabilities to communicate and process information, which can be gathered by recording its environment. [18]. U-CRM is used as a system that can help businesses to make better decisions that benefit customers by sensing needs of customers in real time and by analysing the data gathered. This process helps strengthen the customer-business relationship, providing long term benefits for both. [19].

Real-time Analytics are used to process information as and when the events are unfolding. Real time stream of data is captured from social media like Facebook, Twitter, web logs, e-mails and blogs [20]. It includes Event-Processing, which is a process where streaming data is filtered in large quantities. Analyzing that data and processing the events in

real-time, facilitating prompt responses to problems. This can also be used to store known or similar data patterns so that predefined action can be taken for such cases. Big data agility fuels operational efficiency as access to real-time data enables quick decision-making in response to real conditions of critical systems or production processes [21]. As operational efficiency is increased, the analysis gives a clear insight to what the customer needs. Providing consumer with what he/she wants is itself a quality service. By keeping a track of consumer behaviour on different services and later on analysing it gives rise to better service[21].

The tools and techniques used by companies have changed and evolved as an increasing number of companies are foraying into the arena of Big Data Analytics. Some of these tools and techniques used most commonly are discussed below:

One of the major analytic techniques used is Predictive Analysis. Predictive Analytics is by far the most popular outcome of big data. Analytics research firm 'Opus Research' has recently confirmed in one of its reports, "Predictive Analytics Report: Using Big Data to Improve Multichannel Customer Care", that analytics are used by many top companies like Oracle and IBM to estimate business opportunities as well as the analysis of risks involved. Data that is collected over a long period of time from contact center systems are linked and analyzed to get information into working of factors that are of importance to the success of a business. Systems can be automated with use of predictive tools that are right for the system. An important factor for customer satisfaction which leads to better customer retention, can be realized by automating changes in agent behavior which can help in first call resolutions. Companies can reap the benefits as increased revenues and sales conversions.[23].

Visualization is another term that is cropping up more and more often with Big Data and rightly so as with big data there is a great potential for better data visualization which is the how data is represented in terms of visual graphics and pictures instead of text explanations and briefings. Using Visualizations help individuals and businesses to understand the concepts that data analysts or data scientists try to represent. Advantage of visualization is that dynamic queries can be used to see the immediate effect of it on the visual representation of data opposed to viewing log files or using data-sheets. This also makes visualization have a much faster response time.

Inline Analytics are being referred to as the ticket to big data success. 'Inline Analytics' also referred to as 'deep data analytics' are analytics used to give real time answers to changes in a system immediately unlike ETL systems that

can be slow. Inline analytic system for being successful has to be an integrated into the operational system [24].

Text Analytics also enables companies to analyze data in real time. Text Analytics are used to analyze emails, chats, twitter feeds and other social media posts to identify trends and proactively engage with customers.

Dashboards or Real-Time Reports are used with big data analytic systems which has real time data available. Dashboards are used for immediate viewing of major and urgent performance indicators.

## V. CONCLUSION

There is a large percentage (about 34%) of organizations that are using big data analytics and more are planning to do so in the future. Big Data analytics if implemented correctly, can help organizations improve decisions that affect customer satisfaction. Although many organizations have embraced the new era of big data and are benefiting from it, there are still many organizations that are holding back. Some due to lack of resources and many others because they do not know how to proceed and have an unclear idea about how their organization will benefit from Big Data.

There is no doubt that Big Data analytics can help organizations improve Customer Intelligence if informed decisions are made as setting up the infrastructure for big data Analytics and investing in it will come with its own set of challenges.

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