

# A Review on Big Data Applications in Industries

**Dr.P. Sengottuvelan**

(Associate Professor & Head)  
Department of Computer Science  
Periyar University PG Extension Centre,  
Dharmapuri, India  
sengottuvelan@rediffmail.com

**N. Revathi**

Ph. D Research Scholar[FT]  
Department of Computer Science  
Periyar University PG Extension Centre,  
Dharmapuri, India  
nrevathi\_msc@yahoo.in

**Abstract**— Big Data has been for long out there anywhere, strolling roughly in the hope of being notice. If we have ever wondered about real-world application of huge Data, Detail the applications, along with applicable examples of each industry vertical, it also brings to light the key Industry-specific challenges being faced. With each Industry, we move a tread earlier into perceptive the humanity of big data from how it is being applied to solve a lot of our troubles. This info realistic tries to imprison the spirit of what Big Data means for different Industry sectors. Even though, Big Data specific challenges have been covered in detail here, it is to be famous that the largest factor in Big Data execution has been the financial support issues encounter by the industries in these sectors. Mainly industries are still evaluated whether there is value in completion of huge Data, while some have taken the sink previously. There are a variety of group sets of Industry group, persons who are just testing waters to serious players who are creating products which will utilize Big Data. There are of course, numerous who have already implemented and conception use of Big Data.

**Keywords**—Big Data; Industry; Applications; encountered; Issues

## I. INTRODUCTION

### 1.1 Background

Modern organizations do not only want to know what happened and why it happened, but also want to identify what is incident right now and what is likely to ensue next. Since organization desire for these insight and the acceptance of the World Wide Web, the generation of data and collection speed has increased exponentially [1], The approximately biannual doubling of compute power and storage space for the same price, also known as Moore's law, has also done significant things for The demand for all this information and all these rapid technological developments enabled organizations to capture, store, and analyze large amounts of data.

### 1.2 Sources of Big Data

The sources and formats of data continue to grow in variety and complexity. A partial list of sources includes the public web; social media; mobile application; and restricted records and databases; profitable databases that cumulative individual data from a spectrum of commercial communication and public records; geospatial data; surveys; and conventional offline documents scanned by visual quality recognition into electronic form. The advent of the more Internet enabled devices and sensors expands the capacity to collect data from physical entity, counting sensors and radiofrequency identification (RFID) [2] chips. Private position data can come from GPS chips, cell-tower triangulation of mobile strategy, mapping of wireless network, moreover, data collection and analysis is being conduct at a velocity that is increasingly approaching real time, which means there is a growing potential for big data analytics to have an instant effect on a person's adjacent environment or decisions being made about his or her life. Examples of high-velocity data include click.

## II. EASE OF USE

### 2.1 Motivation

With the help of these rapid developments more organizations are shifting their focus to exploring and exploiting all this data. This phenomenon is called "Big Data" and is recognized on the promising technology publicity cycle as one of the largest IT trends of the last few years. Since Big Data is still a trend, people use Big Data as catch-phrase to describe the enormous amount of information that is too complicated to process by a conventional database or traditional software techniques [3].

In general, organizations see Big Data as an asset. Several organizations make the evaluation with oil, since like oil this Big Data wants to be refined before it gets a value. However, here is where most organizations struggle. Everyone discussion about it, no one actually knows how to do it, so everybody claim they are responsibility it". Therefore, the goal of many organizations today is to create a further practical move toward to start with Big Data and try to go outside the buzzword and catchword.

### 2.2 Problem statement

An organization that recognizes the problems with and the added value of Big Data is Hotel Specials. Hotel Specials is an organization that provides various hotel deals through different websites in the Netherlands, Belgium, Germany, Sweden, Denmark, and Norway. Their organizational objective is to; capture new, store more, and analyze more data and enlarge the organizational performance by making more decisions based on facts [4]. To appreciate these ambition Hotel Specials previously formed a responsibility for Big Data issues and specific Big Data analytics. Furthermore, the organization is at a first stage to change their enterprise architecture and ready to deploy new

Business Intelligence and Big Data software. Firstly, many employees still see Big Data as a buzzword and catch-phrase. Additionally, the culture within the association is that they still rely on perception, experience and gut approach for day-to-day decision. Therefore, the organization is struggling to become more data driven and to increase.

### III. PRELIMINARY KNOWLEDGE

#### 3.1 Research goal

The main goal of this thesis is to create an move toward to happen to a more data driven association. Therefore, this thesis will inspect how an association could start with Big Data and how an institute could optimize the current commerce aptitude processes.

#### 3.2 Used technique for literature reviewing

A vital step to create a proper establishment for any researcher is the task of finally reviewing a chunk of educational literature. In organize to create a methodical writing review, by using a beached theory advance. The first step is mark out the scope of the appraisal and to define the criteria for enclosure or exclusion of assets [7]. These criteria are:

- Firstly, only the top 15 cite article or documents with a exacting search term in their title are preferred. This way the search engine will provide a list of really explicit articles and papers, which also enable the use of forward and backward citations.
- Secondly, article or papers acquire through forward or backward quotation study must exceed 50 citations.

The second step is to identify and select the appropriate 'fields' of research. The subject areas for this thesis are: Business management, Computer science, Decisions science, Economics, Information systems, Psychology, Social sciences.

The third step is to determine the appropriate sources. In this step the researcher will select the suitable databases.

The search terms in this thesis are not combined as one search term, because "Big Data" is a relatively new research topic in comparison with "Business Intelligence" and Decision Making", while the goal for these search terms is to receive the top 15 cited articles [8]. The final step is to make an analysis and present the papers found with the search terms, see addendum A. the author and scope of the articles found with the selected search criteria.

#### 3.3 Big Data

The perceptive of customers increased significantly once shopping moved online. Since the early 2002s, the World Wide Web began to offer unique data collection methods. For example, web-shops can not only track what customers bought, but also how the customers navigate through their web-shop. Customer looked at, how much the customers were subjective by the page layout [5], and if the customer clicked on a promotion link. Association that are born digital and that have the ability to create value from such data can achieve a aggressive advantage on traditional organizations. [4]Conventional relatives simply couldn't access this kind of

information, let alone act on it in a timely manner". Organizations of today do not only want to know what happened.

Since organization hunger for these insights and the adoption of the World Wide Web, the generation of data and collection speed has increased exponentially. For example, a born digital organization could have huge databases from just a single source like click streams. Organizations and workers see these "Big Data" databases as a real opportunity and use it for targeted advertising, for optimizing their offers, or even compare the rest of the market. In fact, the ability to make timely analytics on all this "Big Data" is a key ingredient for many successful organizations.

#### 3.4 Big Data, Business Intelligence, and Decision Making

In the literature, Big Data, Business Intelligence, and Decision Making are measured as three strongly associated research areas. For example, in 1977 Simon already introduced his normative model of decision making that provides a clear overview of the link between Big Data, Business Intelligence, and conclusion assembly [6].

Intelligence: Assembly the identification of the problem calling for a decision and the data collection of the difficulty

Design: creation, developing, and analyzing the available data to test the outcome of the available options;

Choice: select a exacting option based on the selection criteria.

### IV. RELATED WORKS

#### 1. Banking and Securities

In this industry comprise: securities fraud early concern, tick analytics, card scheme detection, archival of audit trails, venture admire risk coverage, trade visibility, and customer data revolution, social analytics for trade, IT operations analytics, and IT policy conformity analytics, among others. The Securities Exchange Commission (SEC) is using big data to check economic market activity. They are at present using network analytics and ordinary language processors to catch illegal trading activity in the financial markets.

#### Industry-Specific big data challenges

Retail trader, Big banks, evade funds and other so-called 'big boys' in the economic markets use big data for deal analytics used in elevated frequency trade, pre-trade decision-support analytics, attitude measurement, analytical Analytics etc. This industry also intensely relies on big data for risk analytics counting; anti-money laundering, demand venture risk organization, "Know Your Customer", and fraud mitigation. Carefully and reliably controlling who can access what data is essential to financial services, from speculation banking and brokerage to retail banking. In some cases, inadequate support for access control is holding back adoption of big data products. It almost certainly precludes the creation of cross-business data lakes. [9] The required functionality includes high-performance

encryption of data at rest and in-flight, as well as fine-grained entitlements control that can be managed via standard corporate systems. Multitenancy is the practice of operating multiple independent applications in a shared environment where they are competing for underlying resources, e.g. operation within a Hadoop cluster. Under these conditions, the ability to share resources and data across multiple businesses while maintaining the required level of service to each is a key concern. Poorly behaved applications can be "noisy neighbors," consuming so much resource that they degrade the performance of other apps in the cluster Product and vendor maturity [10]. Most of the firms we interviewed accepted the high rate of change in open source big data products as a cost of doing business. And they viewed the relatively small size of the related vendors as a risk worth taking. However, some of them felt these issues limited the footprint of big data technologies in their organizations. In exacting, product changes that require modifications to applications can be problematic in highly.

### Banking and Securities Challenges

Early caution for securities fraud and Trade Card fraud discovery and audit trail scheme credit risk coverage Customer data swap analytics. The securities exchange commission SEC is using big data to monitor financial market activity by using network. Analytics and natural languages processors this helps to catch illegal trading activity in the economic markets.

## 2. Communications, Media & Entertainment

Collect, analyze and utilize consumer insight Understanding Patterns of real time, media content usage Wimbledon championships leverages big data to deliver detailed sentiment analysis on the tennis matches to TV mobile and web users in real time[12].

### Industry-Specific big data challenges

Since customers expect rich media on-demand in dissimilar format and in a variety of devices, some big data challenge in the communications, media and activity industry include:

- collect, analyze, and utilize consumer insights
- Leveraging mobile and social media content
- Understanding patterns of concurrent, media content usage

### Applications of big data in the Communications, media and distraction industry

Organizations in this industry simultaneously scrutinize customer data along with behavioral data to make complete client profiles that can be used to:

- Create content for dissimilar target audiences
- Recommend content on demand
- Measure content performance

## 3. Health care Providers

Rising Medical Costs

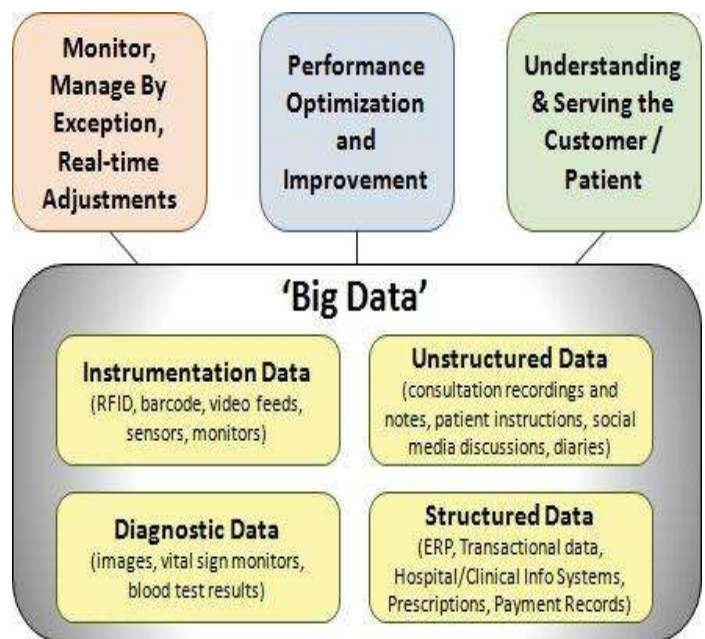
### Unavailability Inadequate

Free Public health data and Google maps have been used by the University of Florida to create Visual data that allows for faster recognition and professional analysis of healthcare in sequence worn in track the spread of chronic disease.

### Industry-Specific challenges

The healthcare sector has access to huge amounts of data but has been beset by failure in utilizing the data to decrease the cost of growing healthcare and by inefficient systems that stifle faster and better healthcare benefits across the board[11].

This is mostly due to the fact that electronic data is unavailable, insufficient. Additionally, the healthcare database that hold health-related information have made it complicated to link data that can show pattern useful in the medical field.



A few hospitals, like Beth Israel, are using data composed from a cell phone app, from millions of patients, to allow doctors to use evidence-based medicine as conflicting to administering some medical/lab tests to all patients who go to the hospital [13]. A battery of tests can be efficient but they can also be luxurious and usually hopeless.

Free public health data and Google Maps have been used by the University of Florida to create visual data that allows for faster identification and capable analysis of healthcare information used in track the multiply of chronic disease.

## 4. Education

Incorporating data from varied sources untrained staff and institutions about big data issues of privacy and data protection the University of Tasmania, Australia with over 26000 students has deploy a learning and management system

the tracks log time, [14] Time spent on dissimilar pages and the in general progress of a student over time.

### Industry-Specific big data challenges

From a scientific point of view, a main challenge in the education production is to include big data from different sources and vendors and to utilize it on platforms that were not planned for the unstable data.

From a realistic point of view, staff and institutions have to learn the new data supervision and analysis tools.

On the technical side, there are challenges to incorporate data from dissimilar sources, on different platforms and from special vendors that were not calculated to work with one another.

Politically, issues of privacy and personal data protection associated with big data used for educational purposes are a challenge.

### Applications of big data in Education

In a different use case of the use of big data in education, it is also used to measure teacher's success to ensure a good knowledge for both students and teachers. Teacher's presentation can be fine-tuned and measured against student numbers, subject matter, student demographics, student aspiration, behavioral categorization and more than a few other variables.

On a legislative level, the Office of Educational equipment in the U. S. Department of Education is using big data to expand analytics to help course right students who are going off course while using online big data.

## 5. Manufacturing & Natural Resources

Increase in the volume, complexity and velocity of data due to rising demands of Natural resources. Great volumes of untapped data from the developed industry, underutilization of data prevent improved eminence energy efficiency reliability and better profit margins.

### Industry-Specific challenges

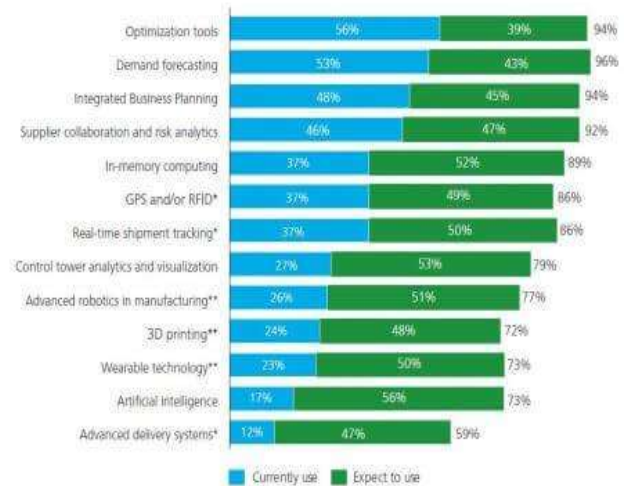
Escalating demand for natural property counting oil, agricultural products, minerals, gas, metals, and so on has led to an increase in the volume, difficulty, and velocity of data that is a brave to handle [15].

Similarly, large volumes of data from the manufacturing diligence are untapped. The underutilization of this in sequence prevents enhanced quality of products, energy efficiency, reliability, and better profit margins.

### Applications of big data in manufacturing and natural resources

In the natural resources industry, big data allows for predictive modeling to support decision making that has been utilized to ingest and join together large amounts of data from geospatial data, graphical data, text and sequential data. Areas of interest where this has been used include; seismic interpretation and reservoir characterization.

Figure 2: Use of supply chain capabilities



**Notes:**

Chart is ordered by the percentages for "Currently use"

\*Manufacturing and retail respondents only

\*\*Manufacturing respondents only

## 6. Government

Integration and interoperability of big data the food and drug administration is using big data to detect and study patterns of food related illnesses and diseases, allowing for faster response to treatments.

### Industry-Specific challenges:

In government the largest challenges are the combination and interoperability of big data across dissimilar administration department and associated organization.

### Applications of big data in Government

In community services big data has a very wide range of applications including: energy exploration, financial advertise analysis, scheme detection, health related research and environmental protection.

### Specific examples are as follows:

Big data is being used in the analysis of huge amounts of social disability claim, made to the Social Security Administration (SSA), that appear in the form of formless data[16]. The analytics are used to procedure medical information quickly and capably for faster decision creation and to deceptive claims.

The Food and Drug Administration (FDA) is using big data to detect and study patterns of food-related illness and disease. This allows for faster reaction which has led to faster action and less death.

## 7. Insurance

Lack of personalized services pricing targeted services to new market segments underutilization of data gathered by loss adjusters. Hunger for better insight, Customer insights for transparent and simpler products, predicting [13] customer behavior through data derived from social media, GPS enabled policy and CCTV foot period. Claims

management analytical analytics from big data has been used to offer faster service

### Industry-Specific challenges

Lack of modified services, lack of personalized price and the lack of embattled services to new segment and to specific advertise segments are some of the main challenges. In a survey conducted by Market force challenges identified by professionals in the insurance production include underutilization of data gathered by loss adjusters and a appetite for enhanced close.

### Applications of big data in the assurance industry

Big data have been used in the industry to present customer insight for translucent and simpler harvest, through analyzing and predict customer performance through data derivative from social media, GPS-enabled strategy and CCTV footage. The big data also allow for better customer retention from insurance companies [17]. When it comes to claims management, analytical analytics from big data has been used to offer faster service since huge amounts of data can be analyzed especially in the underwriting stage. Fraud detection has also been enhanced.

## 8. Retail & Whole scale trade

Unutilized data derivative from customer reliability cards, POS scanners, RFID etc and well-timed investigation of register. From conventional element and mortar retailer and wholesalers to present day e-commerce traders, the industry has gather a lot of information more time [18]. This information, derivative starting customer reliability cards, POS scanners, RFID etc. is not creature used adequate to develop consumer experience on the whole. Any changes and improvements made have been quite slow.

### Applications of big data in the Retail and Wholesale industry

Big data from customer loyalty data, POS, store up register, local demographics data continues to be gathering by trade with extensive stores [19].

In New York's Big prove retail deal conference in 2014, companies like Microsoft, Cisco and IBM leaning the need for the trade industry to exploit big data for analytics and for other uses including:

- Optimized staffing through data from shopping pattern, local event.
- Reduced scheme
- Timely study of inventory

## 9. Transportation

Data from location based social networks and elevated speed data from telecoms have precious travel behavior, Transport require models are based on poorly unstated new social media structures.

In current times, enormous amount of data as of location-based social network with elevated speed data [17]

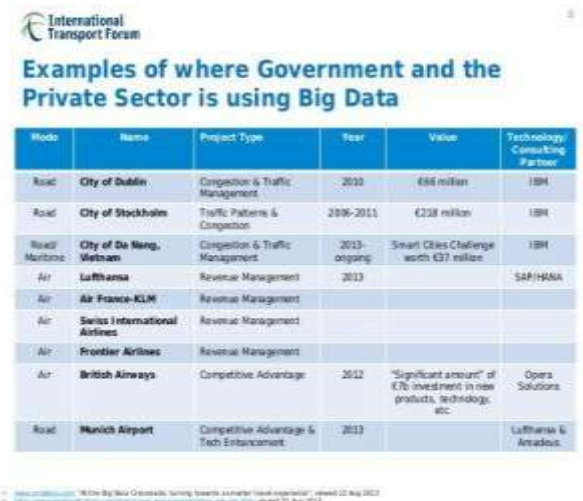
from telecoms comprise precious travel performance. Unfortunately, research to understand travel performance has not progress as quickly.

In most places, transport demand models are still based on inadequately understood new social media structure.

### Applications of big data in the transport industry

Some application of big data by governments, classified organization and individuals contain:

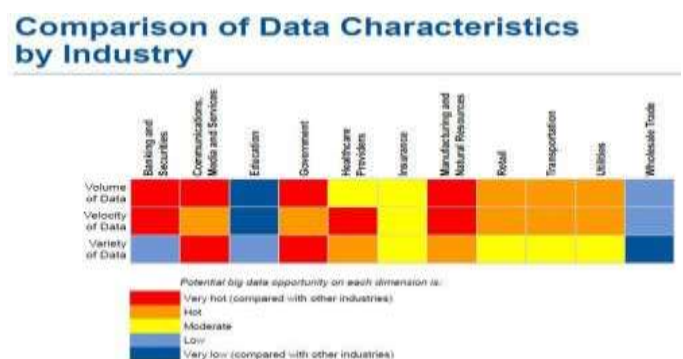
- Governments use of big data: traffic control, path preparation, clever transport systems, jamming management (by predicting traffic conditions)
- Private sector use of big data in transport: income management, technical enhancement, logistics and for aggressive advantage (by consolidating shipment and optimizing freight movement [20].



### Some applications of big data by government private Organizations and individuals include

Government's use of big data

Individual use of big data includes path planning to keep on energy and time for move preparations in tourism etc.



## 10. Energy & Utilities

The energy of 60% electric grid assets will need replacements in this decade, Global installed wind capacity increased by 12.4%, Smart meters become mainstream while consumers want more control & insights into energy consumption, smart meter readers allow data to be collected almost every 15 minutes this granulation data is organism used to evaluate utilization of utilities better which allows for enhanced consumer comment and better control of utilities bring into play [21].

### ***Applications of big data in the energy and utilities industry***

This rough data is organism used to evaluate consumption of utilities better which allows for enhanced consumer feedback and improved manage of utilities use. In utility company the use of big data also allows for better asset and workforce management which is useful for recognizing errors and correcting them as soon as possible before complete failure is experienced.

## **V. CONCLUSION**

The promise of “Big Data” has been a dominant theme in both the business and technology press for several years. It has been defined and written about by numerous consulting and technology organizations. Companies have been trying to improve their businesses for years. Some of the tools and capabilities are new, and certainly the economics of accessing and storing data have improved. There also must be a coordinated and cooperative effort across organizations to realize the potential offered by Big Data.

## **FUTURE ENHANCEMENTS**

The Companies need to go into these initiatives with clear goals and expectations, and an acute awareness of the requirements on their part necessary to ensure success. Big data challenges for the further utilization of industry. This dissertation tries to make a contribution in this respect, identifying the common and important challenges for the use of big data in the several industries and presenting possible solutions for such challenges.

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