

A Review Study on Applications of Big Data in Business Organizations

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Abstract- In this digital era, huge amount of data is generated and available to the decision makers within an organization. Big data is a term used to describe the large volume of data that can be structured or unstructured which the traditional tools and techniques cannot handle. Business organizations have a huge amount of data that affects their business on day to day basis. It includes data that can be viewed and analyzed by different audience obtaining different knowledge and creates value for making effective decision for the business to sustain and achieve its objectives. This review paper aims to identify some of the applications of big data analytics in different verticals of business that helps in effective planning, controlling, directing, and allocation of resources for innovation and creation of new ideas that help an organization to sustain, grow and increase its revenue.

Keywords- Big Data, Big Data Analytics, Decision Making.

I. INTRODUCTION

This paper and is organized into three sections. First, introduction of big data. Second, an overview of type of big data analytics in an organisation. Finally, the application of big data in different verticals of business is provided. The application of data and information flows has dominated in business organizations and practices for several decades, in which traditional business analytic methods have been applied to support decision-making. Companies all over the world try to get the benefits from accessing to information that is available in social media to improve their performance and increase their revenue, processing heterogeneous type of data to extract the valuable data is a problem that many organizations try to solve [2].

Big data is higher and richer data that shows more details about behaviours, activities and events that happened all around, so analytics of these big data give the access to variety and different types of data from huge recourses with less response time [2]. Big data is characterized with 3V's that is volume, variety and velocity and is changing the landscape of businesses, organizations, communities and individual decision making.

Big data has following characteristics these are referred as 3Vs:

1. Volume:

The business organizations collect data from a variety of sources these include systems, business transactions, information generated from human interaction on digital platforms. Hence these sources generate a huge volume of data.

2. Velocity:

It deals with the flow of data from the sources like business processes, human interactions on social media platforms, machines, systems within organizations etc. The flow of data is continuous and bulk. This real time, data streams need to be dealt in timely manner so that the analysts and managers make effective decisions.

3. Variety:

Refers to the types and nature of data that can be structured and unstructured. It includes data in form of spread sheets, messages, updates, images on social media, data collected from surveys, readings from sensors and so on.

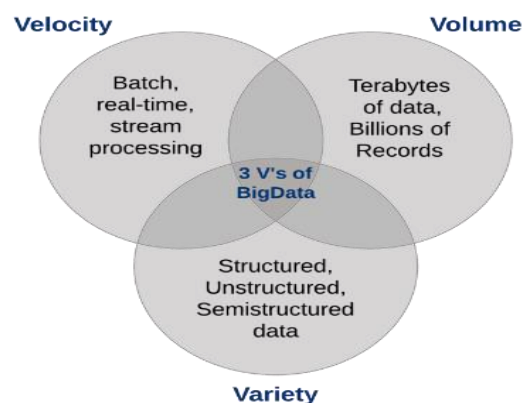


Fig 1. Characteristics of Big Data.

4. Veracity:

Refers to the quality of data collected and vary greatly due noise and can cause abnormality in data affecting the analysis.

5. Validity:

Refers to data collected is correct, accurate and valid for the use. Valid data helps in making right decisions. Companies have been logging their transactions and activities resulting in large amounts of internal data. Combining this with the Internet of Things has enabled access to external data sources that can support the business even further, because it creates insights on the business environment at a more granular level [1].

The concept of big data gained popularity in the early 2000s with aim to understand trends, preferences and patterns in the huge database generated when people interact with different systems and each other. The process of research into massive amounts of data to reveal hidden patterns and secret correlations named as big data analytics. This useful information for companies or organizations with the help of gaining richer and deeper insights and getting an advantage over the competition. [13]

The term "big data analytics" tends to refer to the use of information for predictions, analysis, understanding user behavior and other advance methods to extract and create value from information. Analysis of data sets can help in finding relations to "spot business trends, understanding market and business environment, understanding the customer needs and to satisfy them, finding and creating new markets, product innovation, understanding financial position etc. Business executives, managers, advertising agencies, and governments regularly use these large data sets.

II. METHODOLOGY

- This paper is based on reviewing of randomly selected research articles and research papers in the field of Big Data Analytics and its applications in business to identify data analytics techniques used by the business organizations and their applications.
- The articles and papers selected were completely read for the review.

III. FINDINGS

1. Types of Data Analytics Used the In Business Organization:

From organizations perspective, big data can be utilized by various analytic procedures for descriptive, predictive, and prescriptive purposes that will help companies make more effective decisions for strategic For data management, the structured and unstructured data are to be stored in different systems in which a transparent IT-infrastructure enables data integrations and data sharing [8]. A knowledge discovery process of data recording, data integration, data analysis, and data presentation are to be deployed and designed to support business purposes and decision-making [9]. Other analytic techniques applied, such as machine learning, data mining, and visualization

methods [9]. Intra- and inter-organizational decision support systems rely on a network of systems for which governance procedures assure reliable data analytics [7].

The analytic insights derived can identify problems and opportunities within existing processes, discover explanatory and predictive patterns about what will happen and provide reasons why, and determine the best possible outcome between alternatives based on accumulated knowledge [10]. The major types of data analysis carried out in the business organizations are as follows:

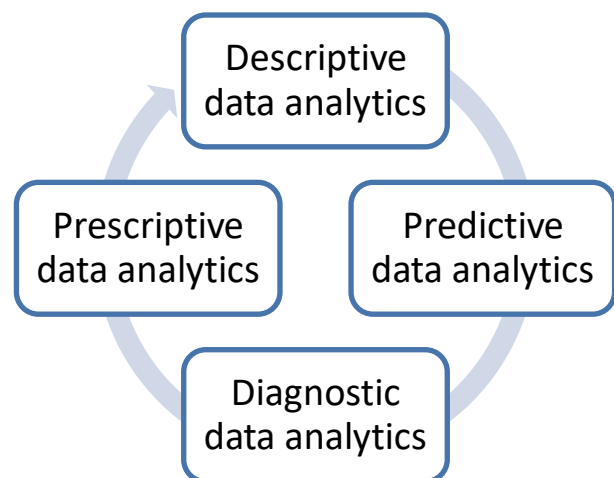


Fig 2. Types of data analytics.

1.1 Descriptive Data Analysis: This type of data analysis analyses the data in real-time and historical data to predict the future. The main aim of descriptive data analysis is to find out the reasons for the past performance. The majority of big data analytics used by organizations falls into this category.

1.2 Predictive Data Analysis: This is the next step of data analytics. It helps in analyzing the past data patterns and trends that can accurately inform a business about what could happen in the future. It helps in setting realistic goals for the business, effective planning and restraining expectations.

1.3 Diagnostic Data Analysis: It is an analytical tool that will help in identifying the root-cause of a problem in the business.

1.4 Prescriptive Data Analysis: It tries to answer what has already happened, why it has happened and what-might-happen. The analysis helps the organizations to find out the best course of action.

2. Applications and Importance of Big Data Analytics in Different Verticals of Business Organizations:

Technology for holding, analyzing data is broadly available at lower cost points. But firms are taking data in order to use it in new levels, using information technology to shore accurate, stable business experimentation that direct decision makers and to examine outputs, business

models, and regeneration in customer experience sometimes, the new trends help firms to make decisions in the real time. These trends have the possibility to guide a revolutionary transformation in research, invention, and business marketing. Some companies, like Amazon, eBay, and Google, considered as early commandants, examining factors that control performance to define what raise sales revenue and user interactivity.

Finance establishments are strong experimenters as well as principal one who keep emending its methods for segment credit card customers. Brick and mortar companies are also using big data for rigid testing the capability to advise customer data by gathering transactional data from millions of customers by using a loyalty card, the collected information is used to analyze new opportunities, for example, how to achieve the most efficacious promotions for particular customer parts and to cognize decision on pricing, advancement other firms using data mining to collect information from social media, southwest airlines, Ford motor and Pepsico, analyze consumer posts on social media like Facebook and Twitter to standard the instantaneous influence on campaign and to examine consumer opinion about their products. Using big data as fundamental factor of making decision which need new capability, most firms are far away from accessing all data resources [13].

Big Data is crucial for organizations to outperform the competition. In many industries, the new entrants and established competitors use data-driven strategies to compete, capture and innovate. The use of big data analytics helps organizations to know how much data they have and how it can be used to create value from it.

The use of big data can help in accomplishing business related tasks like identifying the causes of failure of business, low turnover and sales, helps determining the customer need, risk analysis. Big data analytics helps organizations to take benefit from the huge information present in the organizations. Big data analytics opens up new opportunities for the organizations. Some of the main applications of big data analytics in the business organizations are identified and listed as follows:

2.1 Help to Management Accountants in identifying trends and future predictions

Big data helps in understanding patterns to organizations allowing them to understand and monitor behaviors and help them to predict things and take decisions. Consumer behavior is an important factor in successful running of a business. These trends, preferences and tasks helps in identifying demand and in turn opening opportunities for business. These trends help analyzing economic conditions, weather and the needs to buy and when. It also helps in predicting the wants and changing trends and demands and services over period of time.

2.2 Helps HR Managers in recruiting and managing staff and talent within organizations:

HR department also faces problem in few ways. The Amount of employee information is increasing rapidly both in time and with the expansion of company. The previous employee records are also needed for various purposes. The skills, behaviour and competencies at individual and organization level makes the volume even more. All the information cum data is useless unless HR can store, access and analyse them for the organization fast. Use of Big data analytics in HR gives better speed, satisfaction and scale in an organization. Big Data helps organizations to find the most successful candidates. The companies can now access so much more data that wasn't available before. The data from recruitment sites, social media data, etc. All this information can be analyzed to gain insights of a candidate and helps in knowing interest and proper positioning of candidates in organizations. It also helps in identifying the best recruitment channels to engage existing employees. It helps businesses generate a wealth from HR-related data like absenteeism figures, productivity data, personal development reviews, and staff satisfaction data.

2.3 Helps Operations managers in improving internal efficiency

Big data has the potential to improve internal efficiency by identifying the critical points of the supply chain and operations for almost any type of business. From using devices to track machine performance, to optimize delivery routes companies use the data to measure performance of supply chain and to improve it.

2.4 Helps Marketing Managers in improving customer's relationship management

Today customers are kings of market and the main aim of organizations is to satisfy customer needs big data acts as a very important tool. The data collected helps the company to understand their consumers so that they can improve customer experience and customer care services. It also helps organizations to understand their demands, task and preferences to introduce new products in market and innovate and improve the existing ones. Big data tries to fill the gap between the customers and producers so that the customers are retained.

2.5 Helps financial managers in identifying and generation of new revenue streams

Financial distress modelling stream use data mining techniques to detect and forecast the financial distress (or financial failure) of companies and these techniques are also of interest to auditors to assist with their going concern evaluations. Auditors could harness big data techniques and methods for forecasting financial distress and, combined with their professional judgement, be better able to judge the future financial viability of a firm. By adopting contemporary big data models, auditors could provide this assurance, notwithstanding the current debate

as to the exact meaning of “reasonable assurance” (Hogan, Rezaee, Riley, & Velury, 2008). stock market prediction, particularly that which uses online textual information and sentiment analysis, is an active area of research that is leveraging the usefulness of big data techniques. Companies that collect data might be used to produce new income streams. So that companies must begin with a business reason for analytics after that detect which form of analytics they want in order to determine how data will be collected, sorted, and processed for the previous selected analytics form.

2.6 It helps organisations to check their competition

Earlier understanding to one’s competition it was limited to industry by looking around rivals, through websites or from shops. Sometimes competitors pretend to be customers in order to find out more about a competitor’s service or product. These days to find out what the competition is up to it can be done through the financial data that is readily available, also Google Trends can offer insights on the popularity of a brand or product, and social media analysis can illustrate popularity (i.e., how often a company is mentioned) and show what customers are saying.^[9]

IV. CONCLUSION

With the use of big data it has created value for business and revolutionized the management process. It has helped managers to measure and understand their businesses more which can help them in effective and efficient decision making. Big data has a potential to transform traditional businesses and provide them new opportunities through innovation and providing competitive advantage. Big data helps in better predictions and smart and improved decisions.

It helps in providing real time information, messages, updates, social media content to the organizations that helps them to understand current scenario and work accordingly. It also helps business to check the market forces and change their business strategy.

In the current scenario of marketing where the customer is treated as king the big data helps in creating value for customers as it helps organizations to understand the customer needs and satisfy them and also gives them ideas to create and innovate products in turn helping organizations to generate more revenue by increased sales. It also helps the organizations to understand the associated risks involved and to create a backup plan. Hence big data actually creates value in business management.

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