

Understanding The Role of Big Data Technology in Analysing Consumer Behavior

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Abstract:- Data is the new oil of the 21st Century. Like oil, data is valuable but only when it is refined. This data can provide us with certain wonderful and valuable insights when analyzed in an appropriate way. It is only due to this emerging need for effective analysis & interpretation of data that 'Big Data Analytics' is becoming such an influential domain in today's scenario. This Big data analytics technology has an enormous potential for unravelling the mysteries of any data set in order to derive useful insights out of it. Such insights when assessed & addressed appropriately can lead to certain positive outcomes. The significance of Big Data Analytics for assessing and influencing consumer behavior cannot be overlooked. Marketers nowadays are aggressively making use of this technology for analyzing the behavior of consumers better. The effective analysis of their behavior can help these marketers in making more informed decisions that can contribute positively to the business performance outcomes. This paper seeks to understand the what, why and how of Big Data technology in detail. The paper also tries to investigate the impact of Big Data technologies on consumer behavior as well as on the overall performance of a business.

Keywords – Big Data, Technology, Consumer, Behavior, Analytics, Business

1. INTRODUCTION

Till the 90s, Relational Database Management System was widely used for meeting data related queries. But as the operations of businesses & the data associated with them became more complex than before, a need for a novel & more advanced technology for handling such complicated data sets was felt.

In today's digital era, huge volumes of data are being generated every fraction of second. From surfing e-commerce websites to accessing social media, every individual is contributing to this data pile in some way. This data when thoroughly processed can provide certain meaningful insights that can further be used to take measures for achieving positive results. The role of a consumer is pivotal in a market driven economy. Hence, the analysis of consumers' behavior becomes all the more crucial for any business in order to sustain itself in the long run. This behavior can be analyzed efficiently using the Big Data technology which has already gained huge momentum in recent times.

2. BIG DATA

Big Data is usually characterized by the 3V's i.e. Volume, Velocity and Variety. Hence, this data is very large in size, gets collected at a very fast pace, and is diversified (varied types). Due to these characteristics, Big Data is complex and is difficult to manage using the conventional methods of data processing. Thus, there are a number of Big Data Analytics tools available in the market through which a variety of voluminous data can be analyzed appropriately in order to derive useful insights out of it.

3. CONSUMER BEHAVIOR AND ITS SIGNIFICANCE

Consumer behavior refers to the set of activities which an individual undertakes in an effort to buy a product. Such behavior reveals a lot about a consumer and a thorough analysis of such behavior can help a marketing analyst to identify the buying pattern of the consumer. Identification of such buying patterns can help the marketers in developing effective marketing strategies that can lead to increase in the sales of the product and ultimately the increase in revenues.

4. THE NEED OF BIG DATA FOR ANALYZING CONSUMER BEHAVIOR

With the growth of digitalization, trillions of data related to consumer buying behavior is being generated every fraction of second. Also, as the Consumers are of varied nature, the buying behavior of one consumer may be very different from the other. This makes this data very diversified. Hence, the complexity of data increases manifold making this data extremely difficult to analyze using the conventional methods of data analysis. In this scenario, it becomes inevitable to follow a novel approach to derive meaningful insights out of this data. The Big data technology which has the capability to extract, process and analyze the very big and complex data sets comes into picture then.

5. CLASSIFICATION OF BIG DATA TECHNOLOGY

Big data technology can be classified as:

5.1 Data Storage

Data storage refers to the recording of data (information) in a data warehouse. Before the data is ready for processing, it is

important that the data has been stored at a right place in a right manner.

5.2 Data Mining

Data Mining refers to the process of unraveling the patterns of large and complex data sets which are generally unstructured. Before starting with the statistical and mathematical analysis of data, it is required that the trends and patterns of the data set are identified appropriately. Association rules, market basket analysis are some of the very prominent data mining techniques.

5.3 Data Analytics

It is the technique of analyzing structured data so as to derive useful insights out of it. Data analytics makes use of advanced statistical, mathematical and IT techniques in order to extract meaningful information from a structured data set.

5.4 Data Visualization

Data visualization refers to the graphical representation of data. It enables an analyst to understand the data effectively by identifying the outliers and trends in the data. Data visualization is a useful technique of interpretation especially for individuals with non-technical background. Hence, it is one of the most sought after Big Data Technologies used by managerial level staff in an organization.

6. TYPES OF BIG DATA ANALYTICS FOR ANALYZING CONSUMER BEHAVIOR

We generally classify the Big data analytics domain of Big data technology into the following three sub categories:

6.1 Descriptive

This type of data analytics helps in providing a better and clear picture of what has already happened. Descriptive data analytics makes use of the historical data i.e. the past data. The effective analysis and interpretation of the past data helps in obtaining a better view of the events that have already happened and thus can prove to be a very useful tool for identification of errors with an aim to avoid them in future. The analysis by a global fashion store of what products consumers have purchased in the past 2 months comes under this category of Data analytics.

6.2 Predictive

This type of analytics helps in forecasting the future scenarios that could happen. The Predictive analytics makes extensive use of Statistical and mathematical techniques with Information Technology. Predictive analysis is a very useful technique that could help a business foresee the situations that may arise in future. The business thus, becomes ready for managing such contingencies effectively. Based on the past 6 months of consumer buying history, if a retail outlet aims to forecast the variety and the number of products consumers are going to buy the next month, then the retailer will make use of Predictive data analytics.

6.3 Prescriptive

This type of data analytics provides personalized buying suggestions to the consumers based on their collected buying behavior information. The suggestions thus provided can contribute significantly in stimulating the consumers' preferences and ultimately the consumers' demand. For instance, nowadays once a customer enters a four-wheeler showroom, it is quite ordinary that he or she will receive advertisements from different four-wheeler brands on various e-commerce websites after that. This is due the data of customer which got collected through Global Positioning system (GPS).

7. TOOLS OF BIG DATA TECHNOLOGY

There is a myriad of Big data technology tools available in the market. Some of the crucial tools which have become quite popular in the recent times are:

- Hadoop
- MongoDB
- Python
- Oracle Data Mining
- R
- Tableau

Out of the tools described above, *Hadoop* and *MongoDB* are primarily used for Data storage purpose. *Python* and *Oracle Data Mining* are powerful data mining tools while *R* is one of the most widely used tools for Data Analytics. For data visualization, *Tableau* is an effective tool which is widely being used nowadays.

8. HOW BIG DATA ANALYTICS IS HELPING BUSINESSES: A CASE STUDY

Netflix, a streaming service that offers a wide variety of award-winning TV shows, movies, documentaries and much more collects consumers' data in order to generate a profile of its subscribers. The data so collected helps Netflix generate data analytics models for understanding the choices of its consumers better. Netflix thus makes personalized recommendations to them based on the interpretation of these models. According to the data shared by Netflix, around 75% of viewers' activities are based on its personalized recommendations to the consumers. Hence, we can see how Big data technology is helping Netflix in generating more revenues and growing its business.

9. FUTURE SCOPE AND DEVELOPMENT

The role of Big data analytics is certainly going to increase leading to the monetization of data. Taking note of the current trend, the data visualization domain of Big data technology is going to gain more significance than the other domains in the upcoming times. Data visualization helps an individual even from a non-technical background to interpret the data set effectively. Thus its relevance is certainly going to increase. The role of Predictive analytics has been very crucial and is going to continue being such. The use of Artificial intelligence and Machine Learning in Predictive analytics is going to gain exponential momentum. The data driven world will give rise to the requirements for tech savvy individuals leading to a shortage of skilled staff.

REFERENCES

- [1] Caihua Zhang and Tongxin Tan 2020 *J. Phys.: Conf. Ser.* **1544** 012165
- [2] T. Karunakar, M. Nagarjuna, K. Hema: Concepts, Applications and Future Scope of Big Data, International Journal of Scientific & Engineering Research Volume 8, Issue 5, May- 2017 225 ISSN 2229-5518