Prediction of Customer Retention in E-Commerce Sites using Big Data

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Abstract: E-commerce companies contend with each other nowadays, and one solution to captivating the competition is to acquire knowledge about customer’s consuming preferences so as to establish enhanced adequate personalized services to satisfy the customers. The influence of Big Data Analytics from using variety of tools and frameworks to change the business evaluated in E-Commerce. This project focuses on prediction of target customer in e-commerce sites using predictive models. Predictive analytics targets customer maintenance campaigns to ensure bottom-line ROI. This is achieved by implementing applicable systems for gaining an accurate and deep understanding of the knowledge obtain by analyzing the organization’s data. A predictive model tells us which new customers are likely to come again and which are probably one-timers. Based on the prediction, the system will separate our target customers from the large customer data. This is achieved by implementing applicable systems for gaining an accurate and deep understanding of the knowledge obtain by analyzing the organization’s data.

Keywords: Click-Stream Data, Web- Analytics, Predictive Analysis, Personalization, Dynamic Analysis.

I. INTRODUCTION

The acquisition of knowledge about customer’s consuming preferences can be done by analyzing the data of the sales and customer searches using big data from day to day data bases. This data is a large amount of structured and unstructured data that can be mined for information. These data sets are very large and complex that traditional data processing is not capable to process them. Many big retailers value this data’s information and help them for predicting the user interests and provide their customers relative and interested. These preferences are all generated from Big Data analytics. Big data consists of two types of data one is structured and the other one is unstructured. The Structured data deals with simple basic and regular data like name and address. Unstructured data deals with numerous data which is retrieved from places like social media and includes videos, which plays a vital role to E-Commerce business. These are the focus of Big Data where it gives out superior, data driven outputs. Utilization of big data in ecommerce is given below: The most vital role of big data is to provide a better experience for the customer when they make use of the website and also try to satisfy the user needs by giving the relevancy search. To predict the user interest and behaviors Predictive analytics is been used so that to provide the required products of user interest and satisfy his demands by giving proper online advertisements based on the predictive data. Big data is been used for personalization which in turn personalizes the users information such as mail id and address in order to increase the rate of conversation. By making use of real time analysis prices are changed in order to compete with other retailers. Data retrieved from different devices, sources and application are emerged into big data. The data is retrieved from Social Media such as Facebook; twitter which holds the data posted by millions of people across the world such data is called as social media data.

II. RELATED WORK

Big Data plays an important role if the business is made online to meet the consumers demand and their preference. Data Analytics could be used to assist business oriented organizations to improve their performance and give out the best services for the customer in a reliably way. Data Analytics also provides personalization of the products with respect to the customer’s interest and their aspects towards pricing. This could assist with customer retention and acquisition alongside improving brand image and loyalty. In addition to increased sales opportunities for companies.

Different types of big data that are used in e-commerce are:

A. Online Transactional Data

Which deals with goods selling and providing various other services online such as Amazon, eBay, Expedia or provide services through ongoing transactions like Netflix, Match.com etc., Thisdata is broadly classified into

1. Transaction or business activity data
2. Click-stream data
3. Video data and
4. Voice data

Traditional transactional Records

Which are less structured and contains more customer opinion and their behavior interest. Big Data needs consists of applications, data, analytics and impacts for E-Commerce and Market Intelligence.

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Fig 1. Components of E-Business.

1. Applications
   - Recommender systems
   - Social media monitoring and analysis
   - Crowd-sourcing systems

2. Data
   - Search and user logs
   - Customer transaction records
   - Customer generated content

3. Analytics
   - Association rule mining
   - Database segmentation and clustering
   - Anomaly detection
   - Graph mining
   - Social network analysis
   - Text and web analytics
   - Sentiment and affect analysis

Fig 2. From 2011 to 2016 in E-Commerce Growth of customers has raised from 792.6 to 1321.4 (in millions) Growth in Big-Data analytics (BDA) market worldwide is from 7.3 to 45.3 (in Billion).

4. Impacts
   Long-tail marketing, targeted and personalized recommendation, increased sale and customer satisfaction. The customers for E-commerce have increased enormously in the past decade according to a survey from 5% to 17%. There has been growing emphasis on big data analytics (BDA) in latest environment. But it’s been poorly explored as a concept and works has not been done much on the basis of its experimental improvising the business which will be beneficial for the organization. Data retrieved from different devices, sources and application are emerged into big data. Marketing process can be automated using any of the digital marketing tools which also help in extracting the data for analysis. One of the latest trends in marketing is making use of big data in marketing.

III. E-COMMERCE DATASETS

E-commerce databases consisting of customer’s data (locality, class, mobiles, electronics etc..) forms an essential component of this consumer analytics system. Consumer database can have both relevant and irrelevant data from the view point of analytics problem in hand. This has to be properly dealt by pre-processing. The study of data analytics is been categorized into three types, they are as follows:

- **Social Media Analytics**: considers the social media data which are generally huge in size or large volume of data.
- **Predictive Analytics**: Considers using data which are used for forecasting the consumer behavior and trends.
- **Mobile Analytics**: This considers data generated from mobile phones, tablets and other.

Social media is becoming popular day by day and allow user to express their opinions towards the shared internet as the goods are dealt on the opinion before purchasing of goods, based on seeing the review the customer opinion keeps changing for every item there will be a feedback or review of the comments so as to purchase the category oriented products.

IV. PRE-PROCESSING

Data extracted from consumer database needs to be pre-processed in order to make it suitable for further analytical processing. Appropriate relevance analysis will help in choosing the records and attributes for further analysis. Provide an easy to understand way for seeing the results of analytics. New patterns, outliers etc., can be visualized for easy understanding. Interactive visualization will help in manipulating inputs, study variation and fine tune the parameters of analysis.
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V. BIG DATA FOR E-COMMERCE

Online buyers and sellers are making use of big data for better shopping, selling the goods and gaining good customer relationship, giving better services and customer satisfaction in order to generate more sales. This is how big data benefits e-commerce companies:

- Distribute something more Valuable.
- Distribute More Personalized Interactions.
- Build Accurate Predictions.
- Decrease the shopping cart rejection Rate.
- Supply Customers with a better experience.

The major e-commerce companies using big data are the top in revenue compared to any other online businesses.

A. Big Data Challenges

The major challenges associated with big data are as follows:

- Capture related information’s.
- Storage space.
- Searching of related information’s
- Sharing
- Transfer
- Analysis
- Presentation

Big data are used to give more accurate analysis, which leads to give out the best decision, compete with other organization, cost reduction, risk reduction and effective customer services. The landscape of the e-commerce is greatly changing across the world with the use of big data for various reasons. In E-Commerce, most of their data would fall under two categories structured and unstructured. Their structured data is their regular data. The more valuable piece of data which is not captured but is extremely important is the unstructured data.

B. Utilization of Big Data for E-commerce

Builds a better customer relationship and gains their experience from big data, the customer gets an expertise opinions according to their interest and this data can be used to satisfy the customer. Predictive analytics is used to predict the customer choice and his area of Personalization involves using Big Data to personalize emails and increase conversion rates. By taking the expertise opinion Pricing can be changed constantly to keep up the competition.

VI. CONCLUSION

Big Data widely influences E-commerce services and plays a major role in business making decisions. Customer retention is affected by the product sales and behavior of the customer. This project was designed to predict the retention of customer based on the products they buy. The mined results are displayed both in text form and graphical form. Using these results, the system can predict the category of product the customer’s interest and provides them with the related and interested searches when they shop on their site, so that they attract the customer by giving the required and relevant searches of the products or items. Companies can find their status to work on particular product to grow with the competition and also can easily find and compare with others online stores. In this competitive and fast environment customers mostly go with the online advertisements or through search engines by decreasing the inefficiency of the real time markets. Which can be mined using big data. The types of data which are taken as input and output with the relevant processing steps by numerous technologies available at the core of big data processing.

VII. REFERENCES

