**Application of Big Data in Ecommerce**

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***Abstract:* Today the consumption of data is rapidly growing around the world with large investment in big data analytics hardware ,Software and Services. Due to the large data sets available, Deep-Learning, the sub-set of Artificial Intelligence is recently emerging the hottest technology trend. Large Companies such as Facebook , Google , Amazon, Intel, Microsoft are heavily investing in big data. Ecommerce business is making accurate strategic decisions on how to operate their online empires . Big data analytics plays a vital role in ecommerce for the competitive business environment. In this we study various ways to use big data in ecommerce. Ecommerce business is using trends such as pridictions,optimising pricing and forecasting demands to gain a competitive advantage. Now ecommerce business is making accurate strategies decisions on how to operate their online empires.**

***Keywords:* Ecommerce , Big Data analytics and business intelligence.**

1. **INTRODUCTION**

In the past few years usage of internet by the people all over the world is increased enormously. Increase in the usage of internet there has been increase in online shopping that is e-commerce. It results the amount of information generated is increasing exponentially. The main challenge in increasing data is how to identify and extract useful information from this massive amount of data and filtering the meaningful data for the decision makers. Due to heavy competitions in the market place it is very sensitive to take better decisions to reach the goal. The impact of big data analytics in business intelligence allows overcoming these challenges. Instead of doing distribution many organizations started their direct sale through e-commerce. The direct sale method is useful to the customers because the price of the product is very low compare to store purchase. For the organizations the profit is high in the direct sale. It can be achieved because thorough online purchase and sale there is no intermediate vendors between buyer and seller. So there is no commission involved. But the challenge here is once all the organizations started their direct sale for the same type of product how to handle the competitions between those organizations. So we need a decision maker team to analyze the customer requirements and making effective decision for improving business. The job of decision makers is not only analyze the customer requirements it also keep watching other organizations process like the price setting for the product, offers given by other organizations etc. E-commerce uses website as an intermediate medium between customers and sellers. To attract the customer in first sight it is essential to design the web content in a more decorative and attractive manner. Also the content of the site should be easily understandable to the customers. Because customers are nowadays pretty good in comparing the product in different e-commerce sites or different sellers from same site. The Comparison mainly involves in terms of price, offers given by the sellers, customer review and number of product sold out. Also customers are able to getting information from several channels and have clear idea what to buy and where to buy.

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 behaviours 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.

This survey will address the various methodologies followed in the e-commerce field to improve the business process and usage of business intelligence in e-commerce. And proposes that new future research directions to improve the business process by merging business intelligence and data analytics in ecommerce field

**2.Big Data in E-Commerce**

Big data is changing the way e-commerce stores operate. With big data , online retailers have the opportunity to create better shopping experiences, boost customer satisfaction and generate more sales. Big data is a big deal in sales and marketing given the game-changing values buried under the mountains of data. The recent exponential growth stems from the explosion of social and mobile. 46% of the world is online, which is about 3.4 billion people , and they a lot of data every second. In fact, every second there are:55 thousand google searches , 125 thousand youtube video views, 6 thousand tweets,521 thousand facebook messages , 2.5 million email sent 2000 calls made by skype. The volume and velocity of this data is growing at very rate but businesses that successfully respond to the big data challenge can reap rewards. According to e-marketer, retail ecommerce sales reached a staggering $1.915 trillion in 2016 which is approximately 8.7% of total retail spending world wide which a lot of transactional data. Sales are expected to increase to $4.058 trillion in 2020 making up 46% of total retail spending that year. Retailers are wasting no time investing into big data. Sales of big data products and services are expected to increase at a compound annual growth rate of 23.1% through 2019, with annual spending reaching $4.6 billion 2019.

Nowadays big data is being used to create wealth in many fields, in particular e-commerce is playing an increasing role in modern life and the role of big data in this sphere is constantly evolving. The demand for e-commerce is creating massive amounts of data all the time and traditional processing techniques and ways of thinking have been unable to cope with it. Thus big data methodology has the capacity to launch the e-commerce industry into a new era.

Every organization generated vast amount of data from various source. The Hadoop framework provides reliable storage by Hadoop Distributed File System and parallel processing system for large database using MapReduce programming model. These mechanisms help to process log data in parallel manner and computes results efficiently. This approach reduces the response time as well as load on the end system. This work proposes apredictive prefetching system based on preprocessing of web logs using HadoopMapReduce, which will provide accurate results in minimum response time for E-commerce business activities.

**3.Six ways to use big data in e-commerce**

**Predict trends:** Trends forecasting algorithms combine data from social media post and web browsing habits to identify what’s causing a buzz among the users. Add –buying data is analysed to see what marketing departments are currently pushing. Sentiment analysis determines the context in which a product is discussed online. Are the conversations positive or negative? The data can be used to accurately predict the next top selling products in the specific category .

**Optimtise Pricing:** Big data enables to identify the best price for goods by tracking transaction. Competitors , cost of goods and other variables. Wall mart has invested real-time merchandising to track millions of purchase each day to identify patterns that point the way to higher profits. For eg. One product may not sell efficiently on its own , but when paired with a complementary product , overall sales increase with data analytics , retailers can map the rise and fall of demand and match pricing accordingly. Actions can be taken on insites in a matter of minutes.

**Forecast demand:** Accurate demand forecast are valued because inventory is expensive to keep on shelves. Amazon’s forecasting tool use historical data and have provision for accessing fluctuation in demand during festivals and holidays. Amazon uses brand and SKU data along with the number of visits to various product pages to determine if the assortment will attract customers. This data is then shared with the listed sellers . Analytics enable Amazon to predict the traffic on website along with the possible conversion rate . Through the Amazon web services cloud, the business has the flexibility to scale up in real time.

**Create Personalised stores:** With big data and fats web server technologies, businesses can generate dynamic websites that are filled with relevant product=s placed on the historic behaviour of consumers and their personalised preferences. Automated recommendations have a huge impact on the sales conversions. Percentage of orders influenced by personalised recommendation: 29% non-clothing retail,35% clothing retail.43% multi-category retail.

**Optimise Customer Service:**  Customer Service is a bog deal for those who purchase online. Big data allows businesses to optimise their customer service. By compiling data from previous online and offline interactions, social media information and purchase history, the business can create a 360 view of the customer. Bid data makes it possible to create this enriched view and empowers customer service teams to provide and enhanced customer experience. 89% of consumers refuse to deal with brands after experiencing poor customer service. 45% of consumers will abandon an online transaction of their concerns and not addressed quickly.83 % of consumers require some form of customer support whilst making an online purchase.

**Generate More Sales:** Cart abandonment is a widely-discussed pain point for ecommerce retailers and the figures speak for themselves. Retailers can use big data to offer a personalised experience and prevent potential abandonment. Ecommerce analytics reveal that large volumes of customers fail to convert at the last minute even though an item is in their basket. $3.38 trillions forfeited in sales due to card abandonment. 68 % cart abandonment .

**4.Business Intelligence for E-Commerce using Big Data Analytics**

There are many definitions available for the term Business intelligence (BI). For example

• BI is a technology-driven process for analyzing data and presenting actionable information to help executives, managers and other corporate end users make informed business decisions

• Improved decision-making, increased profit and market efficiency, and reduced costs are some of the potential benefits of improving existing analytical applications, such as Business Intelligence (BI).

• BI defined as providing decision makers with valuable information knowledge by leveraging a variety of sources of data as well as structured and unstructured information . From the above definitions we define BI in the field of e-commerce that BI is the process that receives the data generated from the e-commerce site (eg. customer information, purchase history and organizational information etc…) and analyze those data then gives the reasonable information to decision makers or sellers to predict the customers behavior for taking effective decisions to improve the sale. BI also used to predict market trends, and competitor analysis and to perform customer targeted market. Based on the result from the BI we will change the existing organizational culture for business improvement.

**Conclusion**

In this survey we highlighted challenges addressed by various authors in the field of e-commerce. From this we found still more improvement is needed in business intelligence because BI plays an important role in ecommerce for improving business process. We concluded that our proposed three tier architecture for business intelligence with big data analytics overcome the major challenges identified from this survey. The proposed method gives better idea to decision makers for improving their business process by identifying the customer requirements, purchasing patterns of the customers, giving better ideas to manufacturer, facing competitive environment, keep track of the customer behavior and making them to be a frequent customer and giving idea to promotional marketing. As a future work we plan to use our proposed method to a particular company doing their business in ecommerce and analyzing and comparing the business process improvement for the fixed time intervals.

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