e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:06/June-2022 Impact Factor- 6.752 www.irjmets.com

AN OVERVIEW OF BIG DATA ANALYTICS IN ELECTRONIC COMMERCE

Nikita Gaikwad*1, Dr. Harshali Patil*2

*1Student, MET Institute Of Computer Science, Mumbai, Maharashtra, Mumbai University, India.

*2Assistant Prof., MET Institute Of Computer Science, Mumbai, Maharashtra, Mumbai University, India.

ABSTRACT

Unlike any other time in history, this one is seeing a significant increase in the amount of data generated and captured. Data growth has seen a revival, fueled by ever-lower computing power and the internet's pervasiveness. The E-commerce industry has undergone a paradigm shift as a result of this. Big data analytics is gaining traction in the e-commerce world (BDA). Experts and scholars are eager to investigate the influence of this new analytics tool on corporate values and difficulties. It is, nevertheless, underdeveloped as a notion, preventing theoretical and practical progress. One of the major hurdles to e-commerce as a result of the information revolution is the massive amount of data that must be processed and reviewed to enjoy the benefits. Big Data Analytics (BDA) strives to improve decision-making by analyzing and comprehending large amounts of data, such as messages and social media posts. The impact of big data analytics on e-commerce is discussed in this study.

Keywords: Big Data Analytics, BDA, Ecommerce, Big Data Analytics In E-Commerce.

I. INTRODUCTION

One of the most rapidly expanding BDA segments is e-commerce. Due to their need to stay on top of their game, e-commerce companies are one of the fastest BDA adopters. Both structured and unstructured data are dealt with by e-commerce companies. Unstructured data includes clicks, likes, links, tweets, voices, and other unstructured data, whereas structured data concentrates on demographic information such as name, age, gender, date of birth, address, and preferences. They are referred to as Big Data because of the variety, velocity, and volume of data they contain. Data is collected over time utilizing customer browsing and transactional points in ecommerce to track consumer purchase behavior and personalize offers. This section discusses the many types of big data and how they influence e-commerce.

Big data types used in e-commerce:

1. Data on transactions or business activity:

- Data on transactions or business activity evolves over time as a result of interactions between the client and the company.
- These data are structured and come from a variety of sources, including customer relationship programmes (e.g., company-maintained customer profiles, the occurrence of customer complaints) and sales transactions.

2. Click-stream data:

- In today's connected world, social media and online marketing, such as the use of click-stream data, play a crucial part in a company's ongoing promotional strategy, allowing management to make informed strategic and tactical decisions.
- Clickstream data is gathered from e-commerce websites and online advertisements, as well as social media content including tweets, blogs, and Facebook wall postings.

3. Video data:

- When paired with image analysis software, e-commerce organisations are eager to exploit not only click-stream data or transaction data, but also video data.
- The term "video data" refers to data obtained through the capture of live views. E-commerce firms are capable of analysing extremely unstructured data, such as video or audio.
- This data and the ability to be valuable to e-commerce businesses.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:06/June-2022 Impact Factor- 6.752 www.irjmets.com

4. Voice data:

- Another type of data connected with the big data family is voice data, or data originating from phone conversations, contact centres, or customer service.
- Voice data is useful for evaluating consumer purchasing patterns and attracting new clients.

After analyzing four types of user behavior: click, collect, add to cart, and purchase. The researcher discovered that clicks received the highest proportion because customers view items by clicking on them but do not always add them to a list or cart.

In addition to the Recency, Frequency, and Monetary (RFM) model, clients were classified as (i)VIP, (ii)loyal, (iii)significant customer, and (iv)most likely to leave. These solutions assist e-commerce businesses in communicating with and retaining customers.

II. LITERATURE REVIEW

Big Data Analytics is empowering the ecommerce industry. We learned how Ecommerce classifies and uses data in the preceding section. According to [1] and [3], there is a large amount of data that Ecommerce companies must process, categorize, and analyze. [3] Author, differentiate data types, and classify clients using the RFM model. According to [2,] there are some benefits and drawbacks to using BDA in ecommerce. There are some negative as well as positive effects on consumers. Ecommerce industries that use BDA without understanding the serious implications. According to a review of the literature, BDA is absolutely essential in e-commerce enterprises' ability to profit from their customers' data. E-commerce vendors analyze this data in order to increase revenue and improve the customer experience.

OBJECTIVE

- The focus of this paper is on how Ecommerce businesses use Big Data Analytics approaches.
- Big data analytics can be beneficial to businesses.
- The goal of this study was to conduct a literature evaluation and analysis of past research on Big Data Analytics in Ecommerce.
- Providing inspiration, identifying research limits, and making recommendations to analysts for enhancing this vital research field technique

III. METHODOLOGY

The goal of this paper is to provide a comprehensive overview of Big Data Analytics in Ecommerce, as well as some advantages and disadvantages. There are also some applications for Big Data Analytics. When reviewing the numerous works, it is critical to properly examine the facts. I researched the present state of big data analytics in ecommerce as well as all past academic and non-academic studies to come to this conclusion. Journal articles, conference papers, technical reports, books, articles, and blogs were used to compile all of the information. "Big Data Analytics in E-commerce," "Big Data", "eCommerce" were the keywords I selected, and the filtered criterion "Big Data Analytics" helped me get better results. The data is thorough, reliable, and based on a lot of primary and secondary research.

IV. ANALYSIS

➢ **Big Data Analytics in India**

In the country of India Amazon has collected 29 percent of its sales utilizing hybrid recommender systems, according to the IBEF (Indian Brand Equity Foundation). Data analytics has also been used by e-commerce enterprises to streamline their warehousing operations. Flipkart simplifies over 500 distributors in India's key cities with data analytics. In addition, the company employs 100 autonomous delivery vehicles that select and drop merchandise. It anticipates sorting 4,500 shipments every hour.

The e-commerce business is expected to be worth $50 billion by 2020, according to the National Association of Software and Services Companies (NASSCOM). Every day, the e-commerce industry processes 1.2 million transactions. By 2034, the industry is predicted to surpass the United States as the world's second-largest retail market. The retail and e-commerce industries account for 5.9% of the market for data analytics. In both industries, data analytics has been used to predict trends and provide better product suggestions to clients.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:06/June-2022 Impact Factor- 6.752 www.irjmets.com

In India, ecommerce is obviously massive business, but there's a lot more to it in terms of technology. Technology has had a significant impact on the ecommerce industry, and the ripple effects of artificial intelligence and machine learning were first seen here. Companies have built their ecommerce businesses on data, from personalizing customer experiences to dynamic pricing, A/B testing of new product features, predictive analytics for supply chain intelligence, and hybrid recommender systems. Big data analytics may be an old hat in a game now dominated by AI and advanced machine learning systems, but it is undoubtedly driving services and assisting competitors in closing the sales and performance gap.

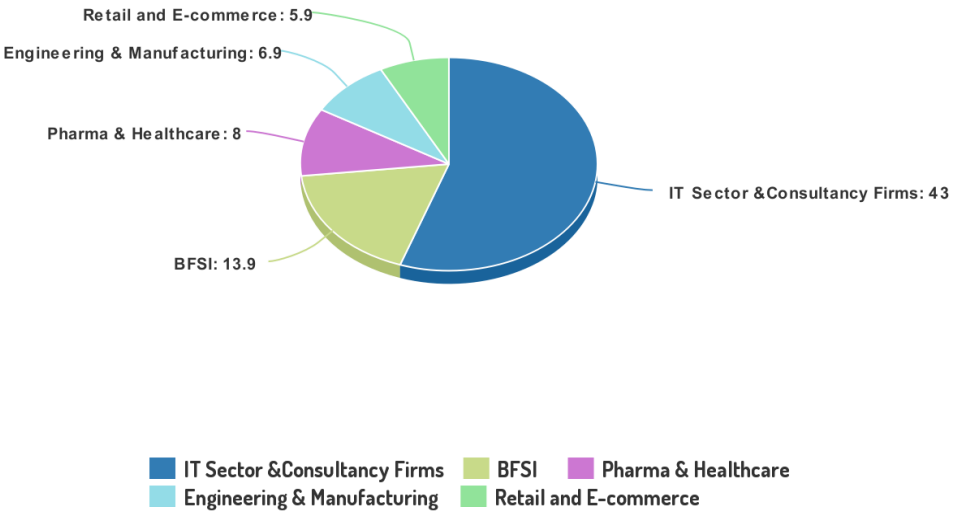

Fig. Data Analytics in Market

➢ **Big Data Analytics Offers Benefits to E-Commerce**

This digital universe, which encompasses e-commerce, includes online consumer behavior, geolocation services, web browser history, and abandoned shopping carts. While gathering consumer data is beneficial, it is the analysis of that data that offers e-commerce businesses a competitive edge.

Big data analytics can help e-commerce enterprises better analyze market trends in light of current market trends. As a result, these businesses customize their marketing to the preferences of their customers, develop new goods that match their demands, and guarantee that their personnel deliver the level of service that customers expect.

1. **Shopping on a whole new level**

- The endless amount of data available to e-commerce businesses fuels predictive analytics, which predicts how customers will act in the future. The average number of products consumers add to their shopping baskets before checking out is tracked by retail websites, as is the average duration between a homepage visit and a transaction. If customers have joined up for a rewards or subscription programme, companies can assess demographic, age, style, size, and socioeconomic data.
- Predictive analytics can be utilized to create new methods for preventing shopping cart abandonment, shortening the time to purchase, and responding to new trends.

2. **Online transactions are far more reliable**

- In order to have a pleasant shopping experience, customers need to know that their payments are secure. Big data analytics can detect unusual spending patterns, and clients can be warned as soon as they occur. Companies can set up alerts for a variety of fraudulent activities, such as making several purchases on the same credit card in a short period of time or using multiple payment methods from the same IP address.
- Similarly, many e-commerce companies now provide multiple payment options through a single platform. Big data analysis can assist you in determining which payment methods are most beneficial for certain clients, as well as the effectiveness of additional payment options such as "bill me later." To reduce the likelihood of a shopping cart being abandoned, certain e-commerce companies have created a quicker

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:06/June-2022 Impact Factor- 6.752 www.irjmets.com

checkout process. Customers can add items to their wish lists, use a "charge me later" option, or pay with multiple credit cards on the checkout page.

3. **Personalization is improving**

- Using big data analytics, e-commerce enterprises may receive a 360-degree view of their customers. This method can be used to categorize customers based on their gender, location, and online social networks. This information can be used to create and send personalized emails with discounts, to utilize alternative advertising for specific audiences, and to promote the product that speak to certain client groups.
- Customers who shop at stores that employ this method are usually rewarded with cashback, which may be redeemed for future purchases. On a number of occasions throughout the year, e-commerce companies could provide loyalty clients extra benefit points on all transactions. During a quiet season, this is routinely done to enhance client interest, attention, and sales. Loyalty programme participants not only feel like VIPs, but they also supply information that companies may use to generate personalized purchasing recommendations.

4. **Sales growth and improved pricing**

- Good prices take precedence over loyalty programmes, safe payments, and simple shopping experiences for customers. To increase online sales, e-commerce companies are beginning to use big data analytics to identify the optimal price for specific clients.
- Customers who have been loyal to a business for a long time may be given first priority for sales, with prices varying according to their location.

5. **Customer service that adapts to the changing needs of the market**

- Customer retention hinges on customer happiness. Even the most competitive prices and products suffer without excellent customer service.
- Customer service-focused businesses are more likely to obtain favorable referrals and repeat business. Every e-commerce company should priorities keeping customers happy and satisfied. Problems with product delivery, consumer satisfaction, and even brand perception on social media can all be revealed by big data. Indeed, big data analytics may be able to pinpoint the precise moment when a customer's perspective or delight switched. It is easier to implement long-term changes in customer service if a company has recognized areas for improvement.

➢ **Big data analytics helps organizations increase revenue**

1. **Alibaba**

- At this multibillion-dollar Chinese ecommerce business empire, which is also the world's largest retailer, big data has aided sales. It has also assisted them in expanding their business by enabling them to use data in offline businesses and other retail sectors.
- Alibaba's several businesses own over 80% of China's computer, internet, and app data, which it can combine with first-party data to create extremely powerful data models.
- The number of individuals who prefer to use their phones for everything has increased to 42 percent, or 410 million people. This represents 73 percent of the total GMV.

2. **Amazon**

- Amazon is a great example of how big data can help ecommerce businesses increase their sales. Amazon places a premium on customer satisfaction over revenue and statistics.
- Amazon uses the data to tailor your experience, forecast trends, and improve customer satisfaction.
- The information is used by Amazon to personalize your experience, forecast trends, and increase customer satisfaction.

3. **Walmart**

- This multibillion-dollar retailer included semantic data into its search platform, which increased the amount of online shoppers who completed a sale by 10% to 15%. In Wal-Mart terms, that's billions of dollars.
- Walmart announced the addition of Polaris, an in-house built tool to boost the machine learning experience on their search engine, in the middle of 2012. And the world is now the beneficiary of it.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:04/Issue:06/June-2022 Impact Factor- 6.752 www.irjmets.com

4. **eBay**

- eBay is utilizing big data to enhance personalization and customer experience for its users.
- Their system can now handle final data velocity with 6 billion writes and 5 billion reads per day. A total of 250 terabytes of data are kept.

5. **McDonalds**

- McDonald's is one of the world's largest fast-food corporations, with over 34000 stores in 118 countries serving 69 million people per day.
- McDonald's is relying heavily on big data to improve the drive-thru experience. When it comes to improving a customer's experience, the company prioritizes the following three factors:

1. Design of drive-thru
2. During the drive-thru, the consumer is given information.
3. People queuing at a drive-thru to place an order.

➢ **Use of Big Data Analytics Has Negative repercussions**

Aside from the positives of implementing BDA in terms of bringing customer values, using BDA may have certain negative consequences for customers.

1. **Data Privacy and Data Security**

- Another key issue, and one that is becoming more prevalent in the context of Big Data, is data privacy.
- The unique qualities of Big Data in the e-commerce ecosystem may pose privacy and security problems.

Because of the large amount and concentration of data, it is a more tempting target for hackers. Furthermore, as data volume grows, the likelihood that data files and papers will contain fundamentally important and sensitive information grows. As a result, Big Data analytics data could be a gold mine for cyber criminals.

2. **Shopping Addiction**

- Shopping addiction is a type of behavioral addiction that is both common and under-recognized. Individuals' failure to identify the severity of post-addiction desires and their inability to control desire are characteristics of behavioral addiction. Shopping grows out of control for shopping addicts, and they don't just buy things.
- The website might recommend alternative products as substitutes or complements to customers using Big Data analytics applications. Customers with things they want to buy will find this application incredibly handy, but it will also be destructive to them. To make a decision, they will need to spend more time reviewing more products. It also suggests other complementary things that the customer feels they should buy to round out their purchase.

3. **Influence of a Group**

- Consumers are influenced by groups to which they believe they belong or desire to belong. In rare cases, group influences might cause a customer's purpose to shift as a result of group thinking. Consumers may avoid companies if they fear they will be lumped into a group they do not want to be a part of. People buy items to help them build and express their self-concept and connect with others who share their interests.
- Individual preferences can shift in social networks influenced by group emotion. Consumers leave reviews on the website after purchasing products or services. Online marketing that is fabricated could not be considered feedback. It has a strong perception in the human mind, allowing it to communicate effectively and socially.

The willingness of consumers is negatively impacted by Big Data analysis. Negative circumstances will lower customers' intentions and encourage negative behavior, eventually leading to their refusing to acquire products or services.

V. CONCLUSION

In today's culture, technological innovation has always assisted a wide spectrum of businesses. There is a race for first position in the ecommerce industry. Ecommerce companies should invest more in Big Data Analytics and make better use of their data. Big Data Analysis can be used in the ecommerce industry to improve personalization, sales, and price, among other things, according to the study's conclusions. E-commerce

companies are turning to Big Data and analytics to stay ahead of the competition. Consumers, on the other hand, confront a variety of issues that Ecommerce should take into account.

VI. REFERENCES

[1] S. Akter and S. F. Wamba,"Big data analytics in E-commerce: A systematic review and agenda for future research," Electron. Markets, vol. 26, no. 2, pp. 173194, May 2016.

[2] Thi Mai Le and Shu-Yi Liaw,"Effects of Pros and Cons of Applying Big Data Analytics to Consumers' Responses in an E-Commerce Context",MDIP,BDCC,DOI:10.3390/SU9050798,May 2017.

[3] SARAH S. ALRUMIAH AND MOHAMMED HADWAN," Implementing Big Data Analytics in E-Commerce:Vendor and Customer View", IEEE Access,vol.9,March 2021.

[4] Uyoyo Zino Edosio,"Big Data Analytics and its Application in E-Commerce", E-Commerce Technologies At: University of Bradford, vol 1,April 2014.

[5] https://millimetric.ai/blog/the-9-biggest-big-data-challenges-for-ecommerce-directors/(Negative Impact of BDA).

[6] https://www.talend.com/resources/big-data-ecommerce/(Importance of BDA in ecommerce).

[7] https://www.ibef.org/blogs/scope-of-data-analytics-in-india-and-future(for current Data Analytics for India).

[8] https://www.hdfstutorial.com/blog/big-data-ecommerce-case-studies/(forindustryCasestudies)