

# Big Data Analytics – Its Impact on Changing Trends in Retail Industry

Avinash B.M.<sup>1</sup>, Dr.S.Harish Babu<sup>2</sup>

**Abstract-** Retailing has drastically transformed business and customer now have access to wide range of products offered through retail outlets both in organized and unorganized sector. In order to remain highly competitive and sustain growth, retailing companies are formulating marketing strategies based on data. This has navigated to a paradigm shift in retailing, where data is seen as an asset to the firm in understanding timely needs of customers, predicting buying behavior, and proposing performance metrics to assess effectiveness. Retailing companies are finding ways to extract meaningful information from larger datasets that are generated through different sources, in different formats. As we see Big Data is one of the buzzword taking technology world by storm, retailing companies are trying to understand how the use of Big Data Analytics can empower them to take right decisions. This paper investigates how the use of Big Data analytics impacts buying trends in retail industry.

**Key Words:** Big Data Analytics, Big Data in Retailing, Customer Analytics, Predictive Analytics

## I. INTRODUCTION

### A. Big Data:

Big Data refers to the larger data sets that are so voluminous and complex that traditional data-processing applications are flimsy to deal with them. It consists of large volume of data – both structured and unstructured.[1]

Big Data facilitate in analyzing computationally to reveal hidden patterns, identify the trends, and uncover unknown associations with several entities to help with making better decisions across business processes among functions or companies. [2]

“The term Big Data applies to information that cannot be processed or analyzed using traditional tools or processes”, Eaton et al. 2012.[3]

Big Data is something that can have a huge impact on the operations of organisations now and in the future, with “most

*Manuscript received Mar, 2018.*

*Avinash B.M., Assistant Professor, Ramaiah Institute of Management, (e-mail: sap.avinash@gmail.com), Bangalore, India, 00 91 94481 62035*

*Dr.S.Harish Babu, HOD, Department of Management Studies, Nitte Meenakshi Institute of Technology Bangalore, India, (e-mail: harishtrue@gmail.com)*

companies at an early stage with their Big Data journey”, Hurwitz et al. 2013.[4]

### Characteristics of Big Data

a. *Volume:* Volume refers to the amount of data being created that is vast compared to traditional data sources.

b. *Variety:* Variety refers to the different formats of data in structured relational database systems collated from different sources

c. *Velocity:* Data is being generated extremely fast. This large amount of data coming at greater speed need to be captured, stored and analyzed.

d. *Veracity:* The quality of data captured certainly has the potential to affect the accuracy of analysis using that data.

e. *Value:* Data value measures the usefulness of data in making decisions

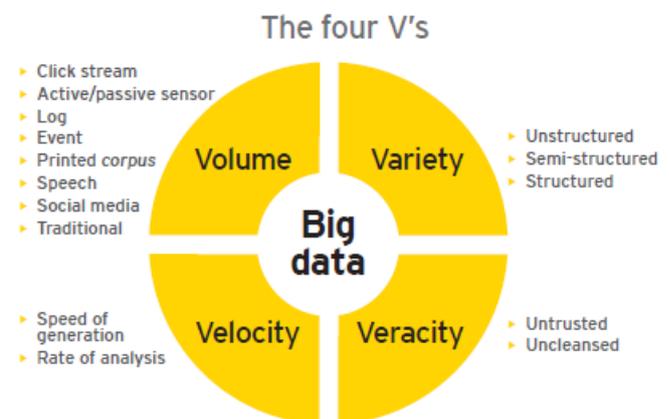


Fig. 1 The four V's of Big Data Source: www.bicorner.com

### B. Analytics

Analytics refers to discovery, interpretation, and communication of meaningful information from hidden patterns in data. Analytics relies on the simultaneous application of statistics, computer programming and operations research to quantify performance.

Analytics is taking industry towards achieving quantum jump in data driven decision making. It is another trend in technology industry and it “refers to ability to gather and use data to generate insights that inform fact-based decision-making” (Marr 2013).

Earlier, the data that was analyzed and used to predict what might happen in the future and was focusing on

industries such as banking and insurance companies, but now, even retailers do, that too, in a big way.

Big Data and Analytics are synchronized and go hand in hand. “Big Data analytics uses predictive and prescriptive analytics in identifying and exploiting the business opportunities and is changing the analytics landscape”, Minelli, Chambers and Dhiraj 2013.[5]

Predictive analytics uses the past data to predict what may happen in the future. Whereas, prescriptive analytics is not just taking data from the past, but also using it to decide on what should be done next to achieve optimal results.

A study by the Economic Times suggests that companies making use of business analytics outshine their competitors, who do not utilize this, by a huge margin. Big Data analytics is fast becoming significant in several industries, especially in retail.

**C. Retailing:**

Retailing refer to an activity that involves reselling. A retailer is a person or an organization who selling the goods and services directly to the end-users or the consumers. It is the sale of goods to end users, not for resale, but for use and consumption by the buyer.

Retailing is “business activities involved in selling goods and services to consumers for their personal, family, or household use”, Berman and Evans 2013.[6]

**D. Analytics for retailing**

Companies offering business analytics solutions for retailers advocate that there are three key areas. These are seen as:

Delivering an effective shopping experience by knowing consumer behavior patterns

Develop efficient operations by using analytics to optimize operational systems, processes and staffing

Improve product assortment and supply chain decisions

**II. AIMS OF THE RESEARCH PAPER**

- A. To identify the emerging trends in retailing in India
- B. To study the impact of use of Big Data in retail industry.
- C. To determine the impact of Big Data Analytics on changing trends in retail.
- D. To recognize how the harnessing of Big Data can boost top- and bottom-line results

**A. To identify the emerging trends in retailing in India**

The future of the retail sector in India seems to be exciting as both organized and unorganized retail businesses along with the government bodies are working jointly to transform

the retail industry while keeping the welfares of the customers in mind.

According to www.ibef.org, March 2018, the Indian retail industry is one of the fastest growing in the world. Retail industry in India is expected to grow to US\$ 1,100 trillion by 2020 from US\$ 672 billion in 2017.

Indian retail market is divided into “Organized Retail Market” which is valued at \$60 billion which is only 9 per cent of the total sector and “Unorganized Retail Market constitutes the rest 91 per cent of the sector.(Source: www.ibef.org)



Fig. 2 Revenue from online retail in India in (US\$ billion) Source: www.ibef.org

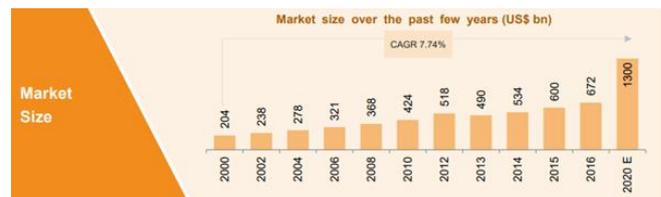


Fig. 3 Market size over the past years (US\$ in billion) 2000-2016 and projection for 2020. Source: www.ibef.org

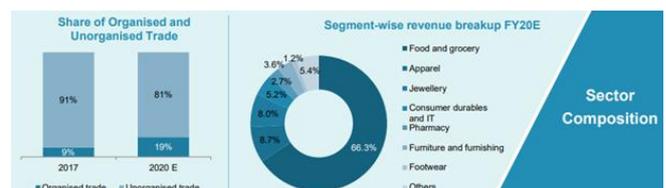


Fig. 5 Source: Share of Organized and Unorganized trade and Segment-wise revenue break-up FY20E Source: www.ibef.org

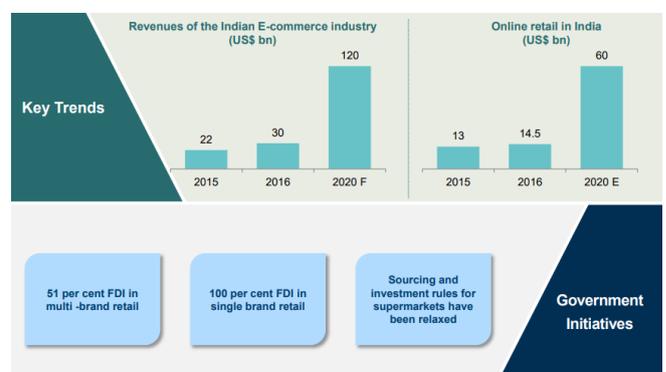


Fig. 6 Key trends in Indian E-Commerce Industry and government initiatives Source:www.ibef.org

Top five retail trends that will make a strong impact on the Indian retail industry

a. Online Retail Market Poised to Boom: Indian online retail market is expected to grow more than 4-fold to reach USD 14.5 billion by 2018. [7]

b. Artificial Intelligence (AI) & Machine Learning (ML) to enhance Customer Experience. [7]

c. Inventory Optimization: Delivery management will become the top priority for retailers to meet increasing customer expectations and helps in taking meticulous actions pertaining to delivery management. [7]

d. Hyper-Personalization for Boosting Sales: Personalization will be the topmost priority of the marketing strategy of Indian retailers. Retailers will leverage hyper-personalization models based on behavioral data, brands preference, demographic preference and pin codes of consumers. [7]

e. Chatbots to Make Consumer Experience Interesting: chatbots will tap customers easily by initiating dialogues with the customers, guiding them through the products or services, providing recommendations and updates, and processing orders. [7]

#### *Other trends*

Redefining of retail business models: Retailers will need to adopt omni-channel not to survive, but to leverage the huge opportunity that it offers. [8]

Next level of growth in digital payments: The changeover from traditional commerce to e-commerce, and now m-commerce, has been predominantly driven by the retail segment. Consumers are shopping through e-wallets and m-wallets giving impulse to online retail. [8]

Emergence of intelligent automation: Intelligent automation delivers a unique opportunity for retailers not just to bring efficiency but also to cut costs, reduce frauds and help scale. [8]

Retailers will look for technology that allows them to reduce excess inventory through precision forecasts and automated planning. Digitalization will play a major role in the retail sector. [9]

In order to distinguish and be the winning choice to a customer, many retailers are trying to provide shoppers with a meaningful experience whether that be online, in-store or a combination of the two. [9]

#### *B. To study the impact of use of Big Data in retail industry*

The retail shopping experience has changed intensely over the past few years. Competition is aggressive than ever with a growth of brick-and-mortar and online sellers for a consumer to choose from. Today's retailers are learning to clinch the changes brought by technology rather than lose customers to the convenience of online shopping. [10]

The biggest challenge facing retailers when marketing is to predict the behavior and preferences of both prospective new clients as well as their existing clients. The advent of Big Data ushers in a whole new era of high performance real time analytics. This in turn provides much more accurate indicators of customer behavior and the ability to predict their interest in any particular product/service at the point where they are considering making a purchase. [11]

*Impact of use of Big Data in retail: (Source: www.proactivecomputer.com)*

a. *In-store Marketing Tactics in the Real Time*  
Data will be crunched in real time and include foot fall traffic and in-store checkout wait times. Retailers with in-store kiosks and free wifi, can empower their sales staff people with mobile devices to better serve tech-savvy customers on the spot.

b. *One-to-One Marketing through Personalization:*  
Personalization in retail, shows that businesses are personalizing online user journeys, and are also able to quantify the improvement, and seeing an increase in sales of 19 percent on average. Retailers who empower shoppers to build and customize products will prosper.

c. *Spotting Most Valuable Customers*  
There is an incredible pay off for retailers in being able to find and segment where their most profitable customers are in. Because it costs substantially more to acquire new customers than it does to retain a business's best customers.

d. *Deeper Insights into customers' Purchase Behaviors*  
The growth of mobile devices, tablets and social media has fast-tracked the availability of new and revealing customer data. Retailers now know more than the basic demographic information about each customer. They can analyze customers' buying history, mobile and social media communications, buying preferences, etc.

e. *Leveraging Technology Evolution*  
Retail companies have been investing in ERPs and aiming their efforts on confirming high quality of data and doing in-depth data analysis. This provides them with better insights into their customers that wasn't possible earlier.

#### *C. To determine the impact of Big Data Analytics on changing trends in retail.*

Use of Big Data analytics can definitely offer marketers with the tools to enhance performance.

Big Data analytics has the ability to facilitate companies to stay abreast of the shopping trends by applying customer analytics to uncover, interpret, and act on meaningful data insights. [11]

The retailers—both offline and online—are adopting the data driven decision making strategy for understanding the buying behavior of their customers, plotting them to

products, and planning marketing strategies to sell their products to record greater profits.

Big Data analytics is now being applied right from predicting the popular products to identifying the customers who are likely to be interested in these products and what to sell them next. [12]

*Key impact areas where retail players see Big Data Analytics is used for*

- a. Predicting demand
- b. Generating Recommendations
- c. Making strategic decisions
- d. Forecasting and predicting trends
- e. Price optimization
- f. Tracking Social Media
- g. Enhancing customer experience
- h. Creation of Client Profiles
- i. Identify the Highest ROI Opportunities [13]

*D. To recognize how the harnessing of Big Data can boost top- and bottom-line results*

**Harnessing big data can boost top- and bottom-line results**

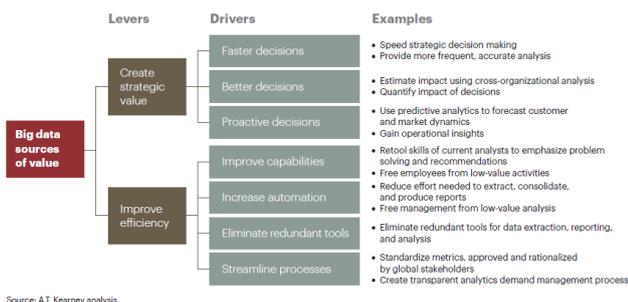


Fig. 7 Impact of harnessing Big Data Source: www.atkearney.es

### III. CHALLENGES

Several challenges will have to be addresses to optimize the full capabilities of Big Data. Data Piracy, Data Privacy, Data Security, and several such others. Since Big Data delivers analytical capabilities, skilled professionals need to be boarded to the team to utilize and run the Big Data.

Companies need to collaborate information from multiple data sources, importantly from third parties, as well as install an efficient data to aid such an atmosphere. [14]

### IV CONCLUSION

Retailing is at a place where there is massive data-driven disruption due to quality of data generated from online purchases, social-network interactions, location-specific smart phone communications that have emerged into a new entity for digital based transactions.

Enhanced performance, better risk management, and the ability to uncover insights, are the paybacks organisations harvest through utilization of Big Data capabilities.

### REFERENCES

- [1] Akter, S., & Wamba, S.F. (2016). Big Data analytics in e-Commerce: a systematic review and agenda for future research. *Electron Markets*, 26, 173- 194.
- [2] Waller, M.A., and Fawcett, S.E. Data science, predictive analytics, and Big Data: A revolution that will transform supply chain design and management. *Journal of Business Logistics*, 34, 2 (2013), 77–84.)
- [3] Eaton et al. 2012, *Understanding Big Data*, McGraw-Hill 2012
- [4] HURWITZ, Judith, (2013). *Big Data For Dummies*. vol.1. New Jersey, John Wiley and Sons, inc.
- [5] Michele Chambers, Ambiga Dhiraj, and Michael Minelli, 2013, *Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses*
- [6] Berman and Evans 2013, *Retail Management: A Strategic Approach*, 12th Edition
- [7] Abhishek Bansal, Executive Director of Pacific India Group, 18<sup>th</sup> Dec, 2017, Top Five Retail Trends in India for the Year 2018, www.bwdisrupt.businessworld.in
- [8] Retail trends for 2018, January 17, 2018, (www.financialexpress.com)
- [9] Farah MalikMD & CEO, Metro Shoes Ltd, Jan 02, 2018, www.retail.economicstimes.indiatimes.com
- [10] The Disruptive Impact of Big Data on Retail, Source: www.datafloq.com
- [11] Ashish Virmani, How Big Data is Transforming Retail Industry, February 23, 2017
- [12] Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., Byers, A.H., (2011). *Big Data: The next frontier for innovation, competition, and productivity*. McKinsey Global Institute.
- [13] Mehra, G., (2013). *6 uses of Big Data for online retailers*, Practical Ecommerce.
- [14] Liebowitz, J. (2013). *Big Data and business analytics*. Boca Raton: CRC Press.

### WEB LINKS

- www.bicorner.com  
www.ibef.org  
www.indiaretailing .com  
www.datafloq.com  
www.proactivecomputer.com  
www.simplilearn.com

#### First Author

Mr. Avinash B.M., is currently working as Assistant Professor at Ramaiah Institute of Management, Bangalore. He is an MBA specialized in MIS and VTU. He is currently pursuing PhD in the area of Big Data Analytics.

#### Second Author

Dr.S.Harish Babu, is currently the HOD, Department of Management Studies, Nitte Meenakshi Institute of Technology Bangalore. He is an MBA and Doctorate by qualification and has vast experience in research and academics.