

Role of big data in retail customer-centric marketing

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Abstract

All businesses today is inundated with data, be it transportation, healthcare, manufacturing, food or retail. They are struggling with managing multiple big data sources. Combining these types of disparate data sources is the next evolution in business intelligence. It should have ability to forecast and deliver predictive insights from large, varied and rapidly changing data sets. However, retrieving meaningful message from the vast data is not easy. Most companies have built an effective data collection system, but very few of them possess the capabilities to retrieve the powerful information from the large scale data even after applying some of the most advanced commercial data analysis systems.

The retail industry has experienced some significant challenges and opportunities in recent years. One such challenge is proliferation of digital media that assists makes customers test and compare products in one store and then buy them elsewhere, this phenomenon is popularly known as 'showrooming'. Maintaining customer acquisition, retention and loyalty is another demanding task. As against this there is incredible opportunity due to penetration and usage of mobile and internet technology. Global competition has forced retailers to engage in real time analysis of enormous data that is generated on a daily basis through various consumer interactions. The use of big data analytics, and reporting can generate insights that will improve the profitability for retailers.

The purpose of the paper is to provide overview of big data analytics in various stages of retail process - tracking emerging popular products, foretelling of sales and future demand through predictive simulation, explore its application in Price optimization, targeted promotions and overall enhancement in customer experience and suggest future developments in marketing, consumer profiling and predictive analytics for retail business.

Keywords: customer experience, price optimization, consumer profiling, customer loyalty, predictive analytics

Introduction

Retailers face a fragmenting audience as new channels emerge and fight for the attention of consumers. "Big Data" is industry's hottest buzzword (Waller and Fawcett, 2013) [18]. It is looked upon as a solution to many of the new age retail challenges but, there is virtually no uniformity in defining Big Data, identifying its purpose, or establishing its role in retail management. Categorizing, assessing quality, and identifying Big Data's impact are very new to management in general (George *et al.*, 2014) [10].

In retail industry massive data that is generated on a daily basis through various consumer interactions. Retailers are exploring analytics to gain a unified picture of their customers and operations across store or online channel and make strategic decisions in hours versus weeks. Large volumes of unstructured and structured data from a variety of sources contain valuable insights about customer behavior, which has the ability to contribute to the growth of retail businesses. (Frost & Sullivan, 2014) [9].

Another characteristic of Big Data is that it contains structured and unstructured data, with more emphasis on unstructured data such as data collected from social media, devices, sensors and such. Sources of Big data include web logs, CRM and ERP systems, customer transactions, videos, audios, medical

records, e-commerce transactions, social media, etc. There are certain sectors that are early adopters of Big Data and Analytics and expect to be big beneficiaries of advancing solutions. Retailers have long collected massive amount of data that include point-of-sale transactional details, demographic information and ever-increasing volumes of unstructured data generated from blogs and social media. Now retailers of all sizes are leveraging business analytics to predict what the customer prefers and how the customer behaves.

Customer Centricity seeks to illustrate the difference between customer service and customer focus, most firms simply seek and placate any customer, when, in fact, they should be seeking only the most profitable ones. (James E. Harris, 2012) [11]. The goal of the Customer Centricity is to enable the entire organization to become closer to their customers by establishing proven "best practices" designed to build customer loyalty and retention. (Business/Technology Editors, 1999) [5].

Research Questions

Based on preceding discussion following questions are offered for examination:

Q1.How does Big Data influence customer profiling?

- Q2. Which factors are contributing to Big Data application in customer profiling?
- Q3. Does Big Data in retail customer profiling facilitates Sales forecast, Price optimization, and Targeted promotions?
- Q4. Does Big Data enabled retail customer profiling enhances customer experience and loyalty?

Methodology

The analysis is based on secondary sources of data primarily scholarly articles, news articles and survey reports and social media. Reports were referred for background study are 'Big Data: Relevance for Retailing' from TATA Consultancy Services by Nathasamy S and Marimuthu R. 'Harnessing the Power of Big Data: Big Opportunities for Retailer to Win Customers' from Infosys Ltd., by Srinivasan N and Nayar R, 'Seeking the Potential of Big Data' from McKinsey Quarterly by Bughin J and Livingstone J and Marwaha S. The researchers interviewed experts in the field for their insights on usage and implications of Big Data in making retail customer centric.

Review of Literature

Big Data and Customer Profiling

The era of big data emerged when cost of storing data fell below the cost of deleting it. As customer interactions are increasingly taking place in various digital platforms, where all actions can be recorded, it becomes a rich source of data. According to Ereveles *et al.*, (2015), "Consumers have become an incessant generator of both structured, transactional data as well as contemporary unstructured behavioral data". The ability to track new customers and create linkages in transactions is important in retailing. As retailers become larger and more diverse, the type of data that is managed becomes more complex.

Analysis of consumer's purchase pattern from each and every transaction in a retail store is used for developing strategy for placement and promotion of products to improve customer satisfaction and sales revenue for the retailers. (Verma *et al.*, 2015) [17].

The short term goals in big data analytics market should aim at building technology foundation and developing customer base for sustainable revenue generation. The medium term goals should aim at supporting delivery schedules and strengthening customer bond with high quality output. (Palem, G. 2014) [16].

Retailers have to identify the moments when the customer is most receptive to their influence, it could be his home or when he is commuting for work or on the way to a mall or browsing through window displays at a store. Companies have to focus on relating with their customers in situations where their communication can be most relevant. (Joseph L. Gagnon, Julian J. Chu, 2005) [12].

In retail markets – knowledge of customer demography vis-à-vis purchase patterns and trends can be utilised for planning and executing more relevant and targeted customer communications and promotions as well as improving supply chain effectiveness.

Data-based decision-making unleashes creativity in trying to

improve conversion, developing a new offer or building a new marketing campaign. It facilitates tracking emerging popular products, foretelling of sales and future demand through predictive simulation, explore its application in Price optimization, targeted promotions and overall enhancement in customer experience. (Marketing Week, 2012) [2]. Most Fast moving consumer goods (FMCG) companies use big data to analyse product purchases and competition, A.C. Nielsen integrated TV and PC usage behaviour with the scanner data, thus widening the scope of consumer-level information. (Agarwal D, 2014). Much of the increase in data quality comes from better data compression, transformations, and processing prior to analysis. Traditionally theory-agnostic predictive analytics tools are likely to have larger impact and lesser bias if they are able to smartly combine theoretical insights (akin to using subjective prior information in Bayesian analysis) with large troves of data. (Bradlow *et al.*, 2017) [3].

Retail customer profiling, customer experience and loyalty

Carbone and Haeckel, (1994) [6] defined Customer experiences as the 'takeaway' impression formed by people's encounters with products, services, and businesses – a perception produced when humans consolidate sensory information.

We now have detailed digital records of what happens in many different types of purchase environments. Data sources include cameras in stores, mobile purchase activities on branded apps, scanners at checkout, direct marketing purchase responses online, online browsing and shopping carts, loyalty programs, 800 numbers and digital TV, among others. The retailers and with their offers creates customer experiences. It could be pleasant or unpleasant depending on customer perception and receptivity.

According to Bagdare S. and Jain R (2013) [1], "Contemporary retailing engages the customers by carefully crafting and delivering experiential benefits to their shoppers. The dimensions of retail customer experience incorporate elements of cognitive, emotional, sensorial and behavioural dimension to express customers' responses towards retail store operations."

Customer's satisfaction, loyalty and ultimately the firms profitability depends upon the delivery of superior customer experience. It is the central concern in retail management. (Kumar *et al.*, 2013) [14].

Customer experience goes beyond the touch points, service encounter and practices (Jüttner *et al.*, 2013) [13]. It embraces pre and post purchase experiences, as well as past service engagements, and their influence on future experience expectations. (Zomerdijk, L.G. and Voss, C.A., 2010) [9].

Retailers frequently concentrate on improving customer loyalty through customer orientated sales strategies, and research by and large reflects that customer satisfaction is precursor to customer loyalty (Mittal and Kamakura, 2001) [15]. The profitability is enhanced due to increased loyalty which in turn is impacted by increased satisfaction. (Cronin, J.J. Jr, Brady, M.K. and Hult, G.T.M., 2000) [7].

Researcher proposes following model based on their secondary findings:

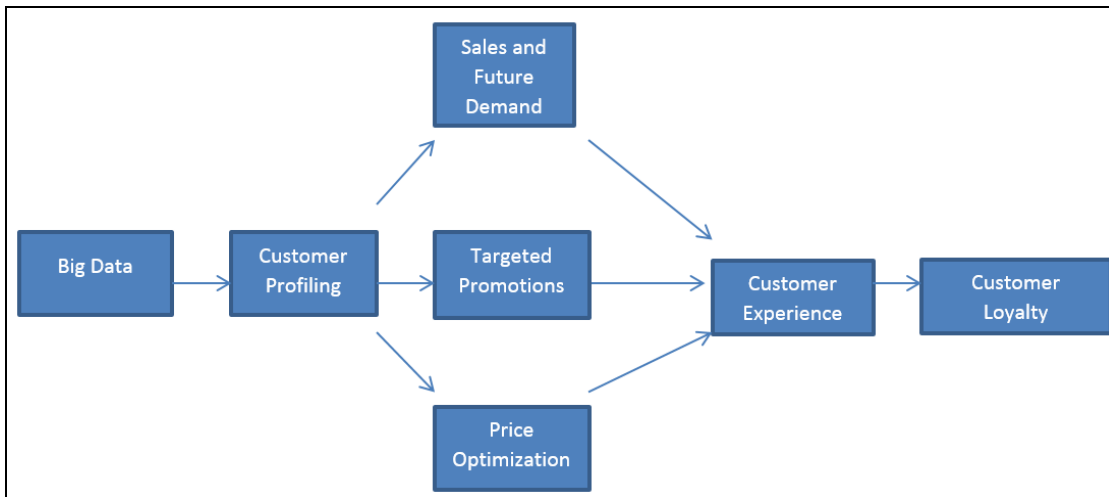


Fig 1: Big Data impact on Customer Profiling

Expert Views

Saikat Chaudhary (Vice President -Retail Analytics Delivery at Accenture) shared that

“Big Data makes a marked difference in creating customer profile as compared to the past. A typical marketer brings data from all platforms to create a complete profile. An example of how customer profile is created from big data is given below.

- You can analyse purchase behaviour in terms of purchase history, credit and return history available.- TRANSACTION PROFILE
- Hit/page view/Click path/duration of stay - WEB BEHAVIOR
- SMS/Geolocation analysis- MOBILE ACTIVITY
- open rates/spam complaints/bounce- EMAIL BEHAVIOR
- Age/Sex/location/other info-DEMOGRAPHICS
- Followers/Posts/Influencers etc- SOCIAL MEDIA
- Subscriptions/language- PERSONALIZATION

You then proceed to understanding the data and mining it properly, Applying data science properly to get real insights,

Choosing right technology, Collection of data and correlating it, Processing and transforming it properly, Identification of the same customer at different platforms.

It helps to customise a specific offering best suited for the customer's needs, simply speaking, consumer profiling leads to targeted promotion which in turn leads to price optimisation and this in turn goes as an input to demand forecast

From transactional profiling, you know a customer has a reference price of \$10 for a product.so you optimise price for that product using elasticity calculations and that goes as an input to your multivariate forecasting. So these are related.

Naimesh Tungare (Assistant VP at Trent-TATA Group)

He shared the for Big data analytics is growing both in online and offline areas. There are minimum four people dedicated for Big Data Analytics for one particular store. Continuous data is collected from online and offline mediums like surveys, reviews, comments, ratings, salesperson interaction, calls etc. The interrelationship can be explained by following figure:

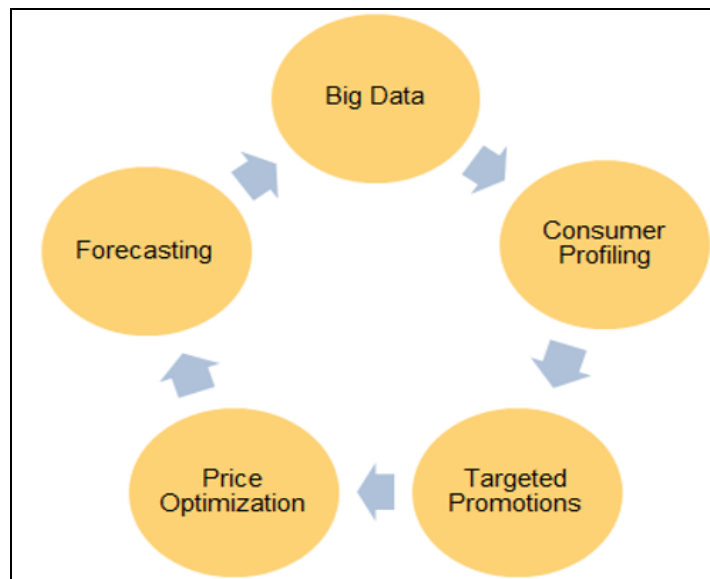


Fig 2

Managerial Implications

Retail gets the privilege for direct customer interactions, but they also generate massive amounts of data. This information holds the potential to drive real frontline differentiation, if retailers have the right tools and approaches to make the most of this unique asset.

Retailers need to tap into large volume and high velocity of unstructured data being generated to enable effective targeted messaging, product management and supply chain tracking for dramatic growth. Big data helps retailers to leverage large and high speed data with intelligent analytics to reveal customer behaviour in a cost effective manner. It helps accrue higher margins and profitability from marketing strategies. It improves the marketing spend, the campaigns, the offer prices and the loyalty programs.

Limitations

In retail business, inadvertent influence on customer behaviour also takes place. Customers are inundated with various offers on a daily basis. They are confronted with endless choices on online and offline space. Retailers give customers personalised offers based on advanced analytics. When the customers accept such offers, it helps retailers refine their profiles creating even more specific target offers. The prescriptive analytics begins to influence customer behaviour instead. This is ethically debatable though commercially viable.

Big data analytics creates combinations of data linkages, however not all of them are meaningful. A correlation among variables does not mean that a causative relationship exists between them, thereby making it difficult to arrive at strategic decisions.

Discrimination based on age, gender, socio-economic background can happen due to customer profiling techniques. Retailers need to value customer privacy and security for a sustainable business model. Before they develop the model, organisations need to assess the value of knowing the answers to specific information-driven questions and analysis. Intent becomes the precursor to big data analytics. "Why do you want to know it" becomes the gateway before "what do you want to know." (Buytendijk, F., & Heiser, J., 2013)^[4].

The value of big data cannot be captured by researchers and organisations in a systematic way as there is lack of established theories and acceptable conceptual frameworks around the big data theme. The existing research on big data is also limited by the restricted access to big data sources.

Conclusion

The value of Big Data analytics has to be extricated from the hype surrounding it. Though there are challenges, like the lack of clear big data strategies, security concerns and the need for workforce re-skilling, the growth potential of Big Data is extraordinary. Retailers can gain sustainable competitive advantages by harnessing it with right tools and right skills. It gathers insight through various customer touch points. The payoffs are significant for retailers who can handle big data. They can sell and promote products by leveraging raw data through use of various metrics. They can build speed and flexibility in their organisational culture enabling informed

decision making. This would lead to enhanced customer experience which in turn yields higher conversion rates and loyalty. Though initial impetus has been on cost saving, it needs to become more holistic. It should aim to deliver value to all stakeholders.

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