Retail Analytics: Driving Success in Retail Industry with Business Analytics

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ABSTRACT
As retail market becomes extensively competitive, the ability to optimize on serving business processes while satisfying customer expectations has never been more important. Therefore, managing and channelizing data to work towards customer delight as well as generate healthy profits is crucial to survive prosperously. In the case of big retail players internationally as well as in India, data or rather big data analytics is now being applied at every stage of the retail process - tracking emerging popular products, forecasting sales and future demand through predictive simulation, optimising product placements and offers via customer heat-mapping and many more. Alongside this, identifying the customers likely to be interested in particular product types based on their previous purchase behaviours, working out the best way to approach them through targeted marketing efforts and finally working out what to sell them next is what forms the core of data analytics. This article is the outcome of a descriptive research on the past, present and future of retail industry and the application of business analytics in shaping appropriate marketing strategies.

Keywords: Retail Industry, Big Data, Business Analytics, Retail Analytics, Marketing Strategy

1. INTRODUCTION
Analytics is the discovery and communication of meaningful patterns in data. As a topic, analytics has found its way from being discussed at the sidelines of industry and technology conferences, to the top of the corporate agenda. With the existing promise of delivering performance improvements not seen since the redesign of core processes in the 1990s, these tools are likely to change the competitive landscape in many industries in the years to come.
Big Data is all about the non-traditional ways of dealing with the modern digital data. We exist in an ocean of digital data. It includes data stored in piles of well-structured databases residing with organisations, streams of data generated from the dynamic social networks, various understandable and intangible signals generated by all kinds of digital equipment all over the place.
For an organisation, Big Data can be about identifying the right datasets from large amount of data commonly defined by the three Vs - Volume, Velocity and Variety; transforming them into readily consumable models; and then extracting meaningful insights for devising business strategies. These insights can be used to improve different aspects of the business - from marketing and sales, to research and operations, and customer services.
Big Data enables clients in the retail Industry to track and better understand a variety of information from many different sources like CRM, AdWord/AdSense analytics, inventory management system, e-mails, transactional data, sensors data etc. Industry can identify the current trends, re-order supplies for hot-selling items, adjust the prices in real time and also manage and control product distribution across different stores to channelise their sales in more effective manner. This provides retail industry with entirely different perspectives of looking towards the datasets available at their disposal. By collating these organisational datasets with social media data streams, they can also use it for better sales predictions, designing relevant campaigns to suit their profitable customers and thereby ensuring customer satisfaction.

2. BUSINESS ANALYTICS
Business Analytics is a set of techniques and processes that can be used to analyse data to improve business performance through fact-based decision-making. It is the subset of Business Intelligence, which creates capabilities for companies to compete in the market effectively. Business Analytics is
increasingly becoming one of the main functional areas in most companies. Companies develop the ability to support their decisions through analytic reasoning.

Thomas Devonport in his book titled, “Competing on analytics: The new science of winning”, claims that a significant proportion of high-performance companies have high analytical skills among their personnel. On the other hand, a recent study has also revealed that more than 59% of the organizations do not have information required for decision-making.

In a recent article based on a survey of nearly 3000 executives, MIT Sloan Management Review reported that there is a striking correlation between an organization’s analytics sophistication and its competitive performance. The biggest obstacle to adopting analytics is the lack of knowhow about using it to improve business performance. Business Analytics uses statistical, operations research and management tools to drive business performance.

Data Analytics today has found its application in various fields across the industry. Today, it is extensively used for strategic, operational and tactical decision-making processes, across various industry verticals. These range from Retail, E-commerce, Banking, Finance, Healthcare, Sports and Manufacturing among many others.

3. INDIAN RETAIL INDUSTRY

Backed by robust economic growth and rising household incomes, consumer spending in India is expected to touch $3.6 trillion (about Rs.240 trillion) by 2020, increasing India’s share in global consumption to 5.8%—more than twice its current levels. By 2020, India’s retail sector is expected to double to $1.1-1.2 trillion from $630 billion in 2015 at a compound annual growth rate (CAGR) of 12%, says a joint report titled “Shaping Consumer Trends” released by FICCI (Federation of Indian Chambers of Commerce and Industry) and consultancy Pricewaterhouse Coopers.

The report’s projections indicate that the average household income in India will triple to $18,500 in 2020, from $6,400 in 2010—acting as a major driver in retail growth and leading to evolution of new consumer segments. Customers are getting more sophisticated, driving firms to focus on premium products, the report said. Increasing disposable income levels and a rising number of sophisticated consumers have given rise to consumers seeking ‘premium’ products.

According to IMRB’s Kantar World panel report published in 2013, nearly 50% of the total number of new launches in the personal care category has been in the premium segment. The report highlights that the growth in the retail sector will be fuelled by both organized brick-and-mortar stores and e-commerce.

India’s overall retail opportunity is substantial and a strong growth in e-commerce is expected due to a demographic dividend (young population, rising standards of living and upwardly mobile middle-class) and rising internet penetration. About 32.18 crore people, accounting for about 25.4% of total population, are using Internet in India, according to digital information and research company eMarketer.

The report also noted a shift in the focus of e-commerce players, towards their own private labels. The report said that private labels account for 10-30% of the total revenues of the e-commerce companies. In 2015, online grocery platform BigBasket (Supermarket Grocery Supplies Pvt Ltd), which sells fruit, vegetables, meat, pulses and spices under its own brand, generated 35% of its revenues from private labels. According to the report, the e-commerce market is expected to reach $125 billion in terms of gross merchandise value (GMV) by 2020, growing at the rate of 31%. GMV is the total value of goods sold over a period of time, without accounting for discounts or sales returns. The report further says that the packaged consumer goods sector will cross the $100-billion mark by 2020, growing at a rate of 18%.

Rapid macroeconomic, demographic and lifestyle shifts in the country clearly point towards exponential growth in the packaged goods industry. These shifts, bolstered by policy and regulatory changes have a strong potential of taking India towards its goal of becoming largest consumer market over the next decade. According to the report, the maximum consumer spending is likely to occur in food, household, transport and communication segments.

Industry leaders are of the opinion that with a lot of investment initiatives and GST (goods and services tax) which came into effect from July, 2017, there is a great opportunity in food processing.
Led by opportunities in the sector, ITC has invested nearly Rs.25,000 crore in about 65 projects - a lot of which is in food processing.

4. CHANGING CONSUMER BEHAVIOUR IN RETAIL INDUSTRY

It is expected that consumer goods firms will now be focusing on online and social media channels to get into consumer’s mindshare due to the growing mobile internet revolution in India. About 650 million people are expected to be online by 2020, out of which 250 million will be shopping online - spending more than $50 billion. Interestingly, at least $5 billion of this expenditure is expected to be on packaged consumer goods.

In the modern, technology-driven world, users or customers in the retail scenario, are not only accustomed to the digital comfort, but they are also very savvy in terms of using it. Thus, when it comes to retail, a customer who now has a fast paced world and is extremely used to instant gratification, is not only impatient and busy but also looking to be the beneficiary of an excellent service.

Just like there are many customers out there, there also exist numerous companies, which are rapidly striving to get online and combat the massive competition, from the others like them. In their bid to stay on top of the game, it is important for those companies to be able to fully understand, exactly what makes the customer click, their likes, their dislikes, basically a full 360-degree view of their customer. This understanding gives them a solid ground to excel at satisfying their customers and on the other hand, attracting the right kind of prospective customers as well.

Analytics plays the most crucial role in this process as, it is the very thing that drives those ‘understand what makes the customer decide’, policies of the retail companies. Through the various functions that it carries forward, it creates insights such as, how would a company be able to increase margins at the product level, it also provides insights in what the customer is like, or why the customer would want to buy a certain product. This is called Market Basket Analysis. The analytics help the companies also identify those items, which a customer would be very likely of purchasing together, what promotions and offers would work the very best for which products and personalized offers for every individual customer. These insights are totally customer based, but there are also those that are fully company based insights. Analytics is able to give the insights in terms of how much spending would a company have to do, store wise product mix, optimal pricing that would get them more buyers, efficient stock strategies and many more.

These, small yet effective insights, gives a retailer acumen about future consumer behavior, which is a must to stay alive in the competitive retail world. This would be a far cry from the historical retailers who only scratched the surface while making use of the piles of customer data available with them. And with the social media redefining the rules of the game, understanding and leveraging these social media sentiments can give them insights into the customer behavior and intentions. The formidable power of social media that can make or break brands is forcing the retailers to transform the retail landscape dramatically with interactive and immediate communication strategies pushing away the traditional approach. Customer has indeed become the king for retailers that needs an ‘out of the way’ experience with unexpected customized and bespoke services on offer to be able to make an impression in the bevy of lures already preoccupying their minds.

The examples of EBay, Amazon and so many others, who have successfully reaped great benefits of data analytics, goes on to prove that retailers, large and small would definitely be able to harness the miraculous benefits of analysing not only structured, but also unstructured data on consumer behavior.

5. ROLE OF BUSINESS ANALYTICS IN RETAIL INDUSTRY

Analytics plays an important role for marketers as they work to achieve the goal of understanding customers. Mobile devices have a prominent place in the expanding Internet of Things (IoT) ecosystem, and businesses shall be leveraging analytics to collect the rich data they provide. Once consumers have agreed to “opt in,” retailers can learn quite a bit from how they use their devices to interact with a brand. For example, what products are they most interested in browsing and buying? How often are purchases made and are there developing patterns? If a shopper is buying the same box of baby diapers once every two weeks, for example, they might appreciate a reminder to buy, notifications of sales or an automated purchase renewal option. Analytics give retailers the power to
identify these patterns and adjust their offerings to better cater to users, in turn enhancing the convenience, customization and commerce of mobile shopping.

The value, variety and velocity of retail data is surging by the day, making it imperative for the industry players to elevate their offerings to match the changing consumer paradigms. While consumers may be tilting between the widely growing network of e-tailing and traditional brick and mortar stores, it’s the innate charm of providing a personalized experience that still draws consumers to ground zero. However, times are e-changing and gone are the days of long-term business planning. With technology paving its way deep into the sector, it has become crucial to transform or else perish. The traditional retail stores are left with no choice but to be a part of the change and make a dash for a multitude of reforms to give attract, retain and widen their consumer base. With understanding the consumer forming the basis of every business strategy, it becomes the demand of the industry to scale up data collection, analytics and its usage. A McKinsey report had suggested that retailers making use of big data analytics could increase their operating margins by as much as 60 per cent.

The tremendously competitive retail environment has made it extremely complicated to understand and win consumers. The roadblock does not exist in the unavailability of data defining the consumers and their buying patterns, rather its availability in large volumes. The biggest challenge is to fathom and interpret the data procured from a variety of channels to take informed business decisions. And this is by far the biggest challenge given the plethora of tools available to analyze and report on data that may not give deep decision making insights unless rightly interpreted and aligned to the business goals.

6. HOW WILL BIG DATA HELP RETAILERS?

Some of the ways in which Big Data could be of help to retail businesses are:

6.1 Identifying and creation of Client Profiles: Today retailers have a better way to identify the customers and offer them the right product. The customer segmentation is now much more refined and data driven based on customers transaction history, basket analysis, loyalty programs, social media interactions. Big Data management segment buyer’s data to create personality points, demarcating faceless mass into slots, through studying their purchases. Transaction reports and loyalty plans are combed through, to bring out relevant data and action on it. It is easier for retailers to get a 360 degree view of the customer and offer them customized products based on their past preferences or what people similar to them are buying.

6.2 Price Optimization: Online retailing is based on dynamic pricing and the price of a product depends on multiple factors from market demand, inventory, competitors pricing, whether a particular product is the seasons must have product, etc. Data Analytics plays a vital role in determining the pricing. Algorithms track demand, inventory levels, and competitor activity and automatically respond to market changes in real time, allowing action to be taken based on insights in a time saving manner. It helps in determining when prices should be dropped – commonly known as ‘mark down optimisation’. Prior to the age of analytics most retailers would just reduce prices at the end of a buying season for a particular product line, when demand has almost gone. But now based on Machine Learning, prices are adjusted real time and recommendations or offers are sent to a specific set of customers who has purchased those products or has earlier shown interest to buy those.

6.3 Generating Customer Loyalty: Customers today need to be treated royally, they want retailers to understand their requirement, recommend product and services that suits them, and keep them informed at every stage of the selling cycle from booking, shipping, and product delivery to feedback. This is not an easy task for the retailers keeping in mind the varied customers they serve. Big Data Analysis can help them to recommend the right products to a customer or come up with targeted marketing campaigns to reach out to a specific segment. It also helps you to understand the customers’ path to purchase or their buying pattern, thus reaching out to them at each step to close the sales cycle.

6.4 Predicting Demand: Today retailers have advanced tools available to them in order to know the trends in the industry. Forecasting demand has become much more efficient now and retailers can easily find if a particular product is in demand during certain time of the year, or
in a particular city or by a specific group and how to adjust the inventory. Retailers also gather a lot of data from social media to understand the changing preferences of customers or do sentiment analysis to find whether the product is getting positive, negative or neutral feedback in the market.

6.5 Inventory Management: Trend forecasting algorithms sort through the buying data to analyse what marketing departments need to promote and what not. Once the retailers get a deep insight into buying trends of the customers, they focus on the sectors where there will be high demand. This involves gathering demographic, seasonal, occasions led data and economic indicators to build a picture of purchase behaviour across the targeted market. This really helps in inventory management in a better way.

6.6 Identify the highest ROI Opportunities: Each customer interaction can have a large impact on existing or potential relationships. Rolling out a new idea to the whole sales force is a risky endeavour, as a wrong decision could lead to immediate as well as prolonged loss of profit. Instead, leading business organizations have found that the best way to isolate the cause-and-effect relationship between any strategic shift and key performance indicators through use of a test-and-learn approach – trying an idea with some sets of customers and comparing the performance of the ‘test’ group to the performance of a well-matched ‘control’ group. After having a better understanding of their current and potential customer base, retailers use predictive risk filters and data-driven intelligence to model expected responses in marketing campaigns, as measured by propensity to buy / likely to buy.

6.7 Fraud Detection: Big Data Analytics can be effectively used to detect any fraud by analyzing data from daily transactions and activities such as purchasing, accounts payable, sales projections, warehouse movements, employee shift records, returns and store-level video and audio recordings.

7. COMPONENTS OF RETAIL ANALYTICS

According to a new report titled, “Driving Retail Growth by Leveraging Analytics” by consulting firm PricewaterhouseCoopers (PwC) and the Retailers Association of India (RAI), a successful retail analytics strategy, will cover the following six areas:

7.1 Predictive modelling: Developing an analytical model to predict future outcomes and empower business users to take decisions quickly.

7.2 Big data and hybrid architectures: Convergence of structured and unstructured data through data integration across apps, sensors, social media and other channels.

7.3 Cloud analytics: Highly scalable and easy way to store and access relevant information, which allows users to access more data faster.

7.4 Advanced visualizations: Present data in visually compelling ways, enabling companies to expand business intelligence capabilities extended to their executives and other employees.

7.5 Self-service analytics: Making analytics a more democratic process by allowing users to make decisions based on their own queries without requiring any sophistication.

7.6 Real-time in-memory: A move ahead of the traditional relational database that can help retail analysts to generate deeper insights across the entire value chain of retail operations, including procurement, supply chain, sales and marketing, store operations, and customer management.

8. THE RETAIL ANALYTICS FRAMEWORK

An analytics framework that retailers can use to structure their programmes consists of four areas namely, merchandising, marketing, supply chain and store operations.
8.1 Merchandising Analytics: Retailers can use merchandising analytics to stock the right product at the right place at the right time. Merchandising analytics enable planners to align their merchandising decisions with customer expectations. The key areas of merchandising analytics are assortment planning, product adjacency and space allocation. Analytics holds the key to optimising assortment. For each stock keeping unit (SKU), retailers can identify a few attributes, such as brand, package size or flavour, that are meaningful to customers. They can then use the sales of existing SKUs to estimate the future demand at attribute level and further use these estimates to forecast the demand for any combination of attributes, including those that correspond to new products the retailer is considering to add to its assortment. Analytics lets retailers discover new products that have high chances of selling well, the report says.

8.2 Marketing Analytics: To keep up with changing customer demands and ensure loyalty, retailers need marketing analytics for deeper customer insight, targeted interactions and improved customer service. Marketing analytics quickly combine all relevant customer data - from point of sale (POS) systems, customer relationship management (CRM) system, loyalty cards, etc., with social media data - perform sophisticated analytics, and share insights to help optimize marketing decisions. It can also help to optimize multichannel performance, improve marketing effectiveness and enhance social media presence.

8.3 Supply Chain Analytics: Retail profitability is directly impacted by the logistics efficiency to maximize demand fulfilment and avoid any back orders or stock-outs. These include interventions in logistics, inventory and supplier performance. Advanced analytics solutions using a global positioning system (GPS) can help in tracking the movement of the fleet, understanding the behaviours of the drivers, identifying hazard points on the routes, etc. This can help in reducing the overall costs, make logistics safer and efficient.

8.4 Store Operation Analytics: More and more retailers are adding sensors to people, places, processes and products in order to gather and analyse information for better decision-making and greater transparency. Predictive analytics applications process this data, optimize the supply chain and decrease inventory shrink. Retail stores are increasingly adopting sensors to determine inventory levels and restock shelves automatically. Location analytics can map how customers move through a store. Using a combination of IoT (Internet of Things) - enabled product and shelf sensors, cameras and RFID (Radio Frequency Identification) devices, one can track which sections of the store receive the most traffic in general over different hours of the day and week. Going forward, retailers can view IoT as a tool that enables them to help their customers through innovations such as smart price tags that can change prices in real time,
mirrors that allow a person to try clothes on virtually, and packaging that monitors the freshness of goods and alerts the consumer when they are nearing the end of their shelf life.

9. CHALLENGES IN RETAIL ANALYTICS
Retailers have already started putting data analytics at the heart of their operations across the value chain - procurement, supply chain, sales and marketing, store operations, and customer management. However, they now need to establish a big data ecosystem, which processes multiple terabytes of new data and petabytes of historical data, which will help them improve their revenues via analytics-based decision-making. While this may sound really exciting, big data management and analysis comes with its own set of challenges.

Several issues will have to be kept in mind to optimize the full capabilities of big data. Privacy, security, intellectual property, and even liability policies need to be stringent in terms of big data. Since big data encapsulates high end analytics, specially trained professionals need to be added to the team to utilize and functionalize the big data.

Companies need to integrate information from multiple data sources, often from third parties, as well as deploy an efficient data to aid such an environment. Many times companies fall in short-sightedness, failing to implement insights from analytics. However, this could be fixed by continuous alterations of retail styles where a certain team is allotted for task of arrangement of insights and their implementation.

10. CONCLUSION
Retailing is at the platform for more data-driven disruption because the quality of data available from internet purchases, social-network conversations, and recently, location-specific smart phone interactions have emerged into a new entity for digital based transactions. Improved performance, better risk management, and the ability to unearth insights that would otherwise remain hidden, are the benefits organisations reap through utilization of big data management.

Retailers can benefit immensely form a structured analytics-driven approach that will help them understand how their customers are using their products and services, how their operations and supply chain are performing, how to manage their workforce and how to identify key risks - insights that they then can then act upon. The pace and the dexterity with which micro data is collected, gives the retailers immediate insights on the shopping trends. This analysis on the move allows them to adjust their prices and add to the lure by announcing on the spot discounts on the sales floor based on their current and previous shopping patterns. This data, often collected through interactive mobile devices in stores, provides the retailer an understanding of the buyers needs and give insights into making smarter decisions about product placement in the store. Data capture and analytics usage certainly have come a long way in the last ten years, and it is interesting to look back on how trends in data analytics have affected the marketplace. As the Internet of Things expands further and our world becomes even more connected, this space will continue to evolve.

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