Overcoming the Challenges and Realizing the Potential of Retail Analytics for Next Generation Smart Retail Business

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ABSTRACT

The retail landscape in India is changing rapidly and is being scrutinized by large scale investments by foreign and domestic players. A still-turbulent economy, new marketing channels, advanced digital technologies, and increasingly demanding consumers all challenge retailers to find new ways of remaining competitive. The purchasing decision journey for consumers involves multiple steps, many of which are now being captured, digitized, and transformed into metrics and data. As this data becomes an implied derivative of essential retail and consumer technologies, the focus is shifting from how to acquire the data to how to extract insights from it - findings that can be turned into differentiation and competitive advantage for the retailer and a better shopper experience for the consumer. Indian retailing is growing fast and impacting the consumer preferences across the country. There is no doubt that business analytics is providing concrete value to thousands of organizations around the world. Also, India seems to play an important role in propagating analytics and data science as disciplines around the world. Currently we are seeing a quicker adoption of analytics and consequently, a huge demand for companies that provide these services. This article is based on an exploratory study on the scope and challenges in retail analytics in India.

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

I. INTRODUCTION

Thomas Friedman in his 2007 book, "The World is Flat," suggests that globalization is creating a level playing field on which a wide variety of competitors have an equal chance at success.[i] Today's consumers are encountering an evolving multi-channel environment in which an increasing number of shopping opportunities are leading to what is called as "flat retailing" experiences.Few industries are changing more rapidly than today's retail sector. Market liberalization and changing consumer behaviour have sown the seeds of a retail transformation. Today retailing is the largest contributing sector to India's GDP i.e. 10% as compared to 8% in China, 6% in Brazil. Modern retailing is capable of generating employment opportunities for 2.5 million people by 2010 in various retail operations and over 10 million additional workforces in retail support activities. Organised retail which presently account for only 4-6 percent of the total market is likely to increase its share to over 40% by 2018.[ii]It offers huge potential for growth in coming years. As a result, India is becoming the most favoured retail destination in the world.

Analytics are driving the move from merchant-driven businessmodels - where the product is the differentiator - to digitalmodels, where every decision is informed by data. Brandengagements are becoming more closely aligned withindividual shopper preferences, creating a brand relationshipthat is shifting from a "nice to have," time-sensitive offer-basedrelationship to a "must have" digital companionship based ondeep insights and understanding of the consumer. To achievethis critical differentiation, retailers are depending less on increasingly shorter product cycles and more on the enduringdifferentiators of relationship and customer experience createdthrough strategic use of data and analytics.[iii]

Companies increasingly understand that their ability to competedepends on their ability to create and harness value from data, andare seeking new ways to look at big data and beyond.According to a study conducted by Analytics India Magazine, more than 2,500 companies in India claimto provide analytics as an offering to theircustomers. This includes a small number ofcompanies into products and a larger chunkoffering either offshore, recruitment andtraining services.[iv]There is growth rate of almost 27% yearover year in the number of analyticscompanies in India from last year. The number of analytics companiesin India are still very few in number, comparedto the strength of analytics

companies aroundthe globe.[v] In fact, India accounts for just4.9% of global analytics companies. The business is seeing fast development driven by expanded demand for cloud-based and prescient analytic arrangements by industries, for example, BFSI, retail, telecom and social insurance. India has 600 analytic data firms with 100 new businesses setup in 2015 alone.[vi] Taking into account this demand would require a huge supply of data researchers. As per Team Lease Services – a staffing arrangements company – by 2020, India will confront a demand-supply hole of 2,00,000 analytic data experts due to their target of improving the future of data analysis in their country.[vii]

II. ROLE OF BIG DATA AND ANALYTICS

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, according to a report titled "Driving retail growth by leveraging analytics" by PricewaterhouseCoopers (PwC) and the Retailers Association of India (RAI).[viii]Data science and analysis allows retailers to collect and fuse datafrom multiple customer touch points such as web, store, socialmedia, and call centers. Cutting-edge technologies combine these withmetrics from previously analog components such as carts, doors,machines, and merchandise. Operationalizing the use of thisdata across business processes now becomes a more practicalproposition, with reliable, automated methods of producing andcollecting data across large populations of people and devices.

The use of data to inform decision-making is of course not anew concept. What is new is that through Internet of Things (IoT) technologies, retail data can finally be extracted in ways that make itreliable for use in managing large-scale retail businesses.Omni-channel retailing is the new normal of retail. With online and mobile sales growing faster than storesales, consumer spending is shifting towards online or online-aided sales. Online, mobile and social channels also represent disciplines with the highest rate of growth of consumer-generated data.

Omni-channel analytics presents an opportunity for retailers to understand growing activity in this strategically important area of the business. They must do so by tapping into a growing mass of consumer data,while at the same time integrating these relatively newer data sources with existing enterprise data.Omni-channel ranks highest among business functions in terms of retailers' plannedtechnology investments in analytics, as per the Retail Industry Research conducted by EKN.[ix] Investments will focus on improving Omni-channel analyticsmaturity, as among the various retail business functions, retailers rated it lowest in terms of leveraginganalytics strategically. Retailers need to move from e-Commerce analytics to Omni-channel analytics, i.e. assessing the effectiveness of channels in concert with each other rather than in silos, and identifying cross-channel, rather thanchannel specific, consumer behaviour trends and patterns. In addition, at the lower end of the maturity spectrum, retailers conduct basic operational analytics with goalssuch as Search Engine Optimization (SEO). The future of Omni-channel analytics is in strategic analysis of performance metrics such as customer loyalty, customer value and channel performance.For such data to be useful it must meet four key criteria. It must be accurate, affordable, scalable (all affordedby the evolution of key technologies), and finally it must be actionable.

- *Accurate:* Automating the creation and collection of shopper behavior data in a natural retailenvironment produces more consistent, quantified, and accurate data, reducingvariation and errors from manual observation and point-of-view reporting.
- *Affordable:* Data automatically generated from existing technology platforms measuring everyshopper, every day provides an affordable way to acquire large amounts of data ina non-invasive manner.
- *Scalable:* Platforms such as mobile, video, web, and social can be implemented and dataeasily accessed, allowing the scale necessary for retailers to reach and measureevery shopper in every store.
- *Actionable:* Capabilities for alerting, setting thresholds and performance markers, along withcollaboration tools for instant sharing and engagement, make the data actionablein real time.

Retailers in turn must commit to usingthe data to make business decisions - a pivotal cultural changethat sounds easier than it sometimes is to accomplish.Understandably, retailers are focusing on metrics thatreflect and impact the customer journey. Such analytics areessential for creating differentiation, as they provide insights intohow and why shoppers make the decisions they make alongtheir path to purchase. Metrics generated from mobile, video,web, and social media help to improve shopper marketingas well as operations.

Metrics can be gathered using a wide variety of sensors anddevices, including smartphones, Bluetooth beacons, weightand motion sensors, counting systems, active RFID (Radio-frequency identification) tags,and even ambient condition sensors for moisture, weather,and temperature. The most advanced analytics systems canintegrate data streams from these types of sources with businessinformation systems, merging workforce information, POS (Point of Sale)transactions, loyalty, and subscription data. Ultimately, seamlesssharing and access to all these different types of informationis the key to creating adoption and delivering business value.[x]

Strategies that consider real-time collaboration tools as part ofthe data value equation, deliver complete systems to their users, hencefacilitating the insights-to-action value proposition.

Shopper Behavior Metrics / Insights	Operational Metrics / Insights
• Traffic (entrance, aisle, endcaps, departments) • Unique visits, repeat visits • Associated/unassociated devices • Path metrics • Photo pins/repin activity metrics • Dwell times and events • Queue metrics (number in queue, wait times, abandonment, behaviors in queue) • Gender metrics • Kinetic heat maps • Behavioral data visualization • Facial detection/recognition • Basket metrics (IPT, ATV) • Conversion analysis for promotions/tactics • Social sentiment/influence • Conversion (store, aisle, category, SKU) • Check-in/opt-in rates	• Point-of-sale analysis and transaction attributes • Staff productivity metrics • Engagement rates • On-shelf availability – out of stocks/replenishment • Shelf activity/item movement • Sweeps and risk management • Asset tracking (carts, fixtures) • Energy use analytics (lighting, HVAC) • Space analysis metrics (hot spots/cold spots) • Wi-Fi service utilization/ interference • Repair, replacement warnings • Queue metrics • Conversion analysis for operational variables

(Source: Cisco White Paper on Big Data, 2014)[xi]

Information gathered from in-store and online activity can alsobe augmented by opt-in social media monitoring and location-aware mobile analytics. Participating customers using mobilenetworks and social media from the store, or showroom, atthe same time identify their influencers, relevant demographics,likes, dislikes, and preferences, allowing stores to capitalize onthis often-dreaded practice. Based on the fusion of this data,a map can be automatically created to help location-awaresystems deliver contextual content. Such messages maypromote products, offer timely price matches, or drive relatedproduct awareness to encourage upsell as the customer movesthroughout the store.[xii]

III. RETAIL ANALYTICS IN THE REAL WORLD

The applied uses of analytics to real-world decision making arenumerous, and many retail industry leaders are achieving valuewith innovative new approaches. A few recent examples include:

- Specialty retailers using video analytics to study customerpaths and behavior, helping them to design more effectivestore layouts
- Big Box retailers investing in Wi-Fi networking and newmobile way-finding apps to help customers navigate throughlarge stores or malls, getting them to desired products faster
- Resorts and hotels investing in mobile analytics to gathershopper information from their retail spaces
- Mall operators using the network to track social mediaand shopping patterns, and delivering this value-addinformation to tenants
- Grocery and fast-moving goods retailers utilizing videoanalytics for traffic and conversion analysis, and then usingthe same information to integrate workforce managementand re-align staffing based on traffic trends
- Specialty retailers using social sentiment analytics to improve"voice of the customer" feedback to assess overall brandstatus and the launch of new products, services, or offers.

Further, with the analytics tools, retailers can:

- Identify their most profitable target customerbase through customer segmentation andprofiling.
- Develop close relationships with customersbased on a deep understanding of theirbehaviors, predicting future behavior and identifying their needs.
- Deliver targeted advertising, promotions andproduct offers to customers that meet theirindividual needs and motivate them to buy.
- Tailor pricing strategies that provide competitive prices while maintaining profit margins.
- Maximize marketing investments and allocationacross various media and marketing channels[xiii]

However, the main challenge of big data is just that - it's big.Massive amounts of structured and unstructured informationare piling up in retailer and supplier data warehouses. Customermetrics derived from video and other sensors, social media, call centers, and mobile devices have the power to provideunprecedented insight into the purchase decision process.

IV. CHALLENGES FACED BY RETAIL ANALYTICS

The challenge most retailers face is in extracting insights from the huge volumes of data generated through multiple channels. Analytics, backed by robust data management, has the capability of digging into these mountains of data, too gigantic now for any human effort, and of unearthing patterns invisible to the statistically-unaided eye. Gartner's Robert Hetu says, "But this breaks down when a broad range of customer contextual data enters the picture. Retailers are really good at understanding products, but not at understanding customers."[xiv]

One major issue regarding analytics is thatretailers may feel as if there are too manyanalytical options to explore. The breadthof analytical processes and applicationssuggests that retailers need to selectivelytarget investments in analytics based on theirstrategies and industry positions. In a difficulteconomy, retailers may also need to adopt firstthose analytical applications that have savedmoney for other adopters, including pricing and assortment optimization.

Some of the major stumbling blocks for retail business while executing real-time analytics are

- *Data identification***:** Data classification is the essential step of the planning phase. To begin with, you must take one project at a time. Once accomplished, you can get an idea of the success rate and jump to the next project. You will also have the knowledge of what to include in the data and what provides you more customized information crucial to growing your business. This is the time you should involve your stakeholders and collaborator in your business decision making who can take the decision according to the business direction and can take immediate necessary actions if and when the need arises.

- *Data Storage***:** Consulting firm Gartner Inc. reports that enterprise data growth rates now average 40 percent to 60 percent per year. Simply storing the data is becoming a real challenge.[xv] Companies are looking at options like data lakes, which will allow them to collect and store massive quantities of unstructured data in its native format. The problem is, data lakes have to be constructed wisely or they quickly become a useless wasteland where data goes to never be retrieved again.

- *Data security***:** Most of the companies know the significance of security, but many ignore it due to the complexity it creates. Initially, the big data analytics will not be providing any kind of security, as it only keeps a small amount of the customer information for future analysis. However, in the later stage when bulk data is gathered the big data analytics secures it from all the internal as well as external risks. A secured platform is what's expected in the real-time analytics, which will improve customer loyalty and strengthen the bonding.

- *Manpower for Managing Data:* Not everyone can stroll in and make data meaningful. It takes a full set of hard and soft skills in order to be a successful data scientist. While the debate over the shortage of IT workers rages on, in the realm of data science, the shortage is a proven reality. One option for businesses at this stage is to develop their own data professionals in house. But this can be very expensive and the results will often fall short. The other option is to work with an organization that specializes in big data. That way, you are allowing the people in your own company to specialize in whatever it is your company does, while letting the data people handle the data stuff.[xvi]

- *Big data governance strategy***:** The resources from where you collect data should be true-blue, so that it can be trusted by users. Big data analytics used as retail analytics should be stored with the highest security. If any organization is using the data, then limitations should be defined in terms of how much data to use and for what purpose. These data are just like valuable assets as they are customer's record that supports in understanding their behavior, taste, preferences, and budget. Hence, in the retail environment, big data helps in generating value.[xvii]

- *Data utilization***:** Businesses are always in love with numbers. They decide to come to the final decision based upon the numbers. But these numbers if not correctly made use of can ruin any business. When a company is planning to launch a new product, it is the retail analytics outcome that they depend upon to identify their target customers. The entrepreneur should have the ability to understand which data is necessary and how to utilize that data with the previous data sources. For example, you are selling glasses, so your target customers must be those who love eyewear such as specs or lens. Thus, your focus must be on these prospects, and not on somebody who is looking for a bag for his girlfriend. This first thing here is to know who your target customers are, or else, the result can be terrible. Harnessing Big Data for great in-store personalization is also an important feature of retail analytics.

- *Solution Cost*: Since Big Data has opened up a world of possible business improvements, there is a great deal of experimentation and discovery taking place to determine thepatterns that matter and the insights that turn to value.[xviii] To ensure a positive ROI (Return on Investment) on a BigData project, therefore, it is crucial to reduce the cost of the solutions used to find that value.

- *Measurement of Social ROI*: Social ROI should only be measured in some form of financial metric. "Views" and "comments" can be a nicebarometer – but you would be hard pressed to make a legitimate business case for something without ameaningful financial metric. Whether it is increased deal flow, reduced cost of customer acquisition or somethingof that type, it is only a matter of time before social ROI is placed under the analytics microscope. The tools to dothis are already around; it seems to be a question not of "how to do this" but rather "when will marketers adopt it".In the coming years, the adoption of big data analytics in retail will be sky-scraping for consumer-oriented organizations. This is because the advanced analytics can generate a higher ROI for retail companies if done appropriately.[xix]

CONCLUSION

Knowing who is not purchasing and why, can be as important as understanding those who do purchase. The right insights enable a closer, stronger relationship with consumers. The possibilities are almost endless when it comes to analytics projects - retailers may choose to begin in any number of business areas, pivoting to the data-driven decision culture required as the Internet of Everything evolves. The key is to launch and define a winning data strategy for key business areas, mapping the right metrics to decision processes. Such programs help retailers achieve differentiation of products, drive conversion, personalize the customer journey, and manage the business more efficiently. Based on a more accurate and comprehensive body of data, they will lay the groundwork for business success both now and into the future. The importance of customer loyalty is well acknowledged,, and successful retailers are continuouslylooking to invest in customer loyalty programs toattract new customers and retain their customerbase. It is imperative for retailers to delve deeperinto customer data and utilize different analyticstools to derive more valuable customer insights.

Retailers that capitalize on these trends will better connect with their customers and win at the loyalty game. The line between online and offline is blurring more than ever. As retailers work to build experiences that best represent their brand, regardless of channel, they will be wise to leverage the complementary strengths of digital and physical for the ultimate good of the customer – and their own bottom line. As consumers become more demanding and expect greater capabilities in an always-on world, Big Data and analytics will only continue to influence how retailers set their strategies. Analytics, backed by robust data management, has the capability of burrowing into these mountains of data, too huge now for any human effort, and of discovering patterns invisible to the statistically-unaided eye. It offers these retailers the capability to transform their businesses. For that they need to develop a robust understanding of business along with analytics and fit solutions to challenges rather than the other way round. From return on engagement to return on local, the ability to grab new data and insights is almost endless in today's retail world.

REFERENCES

[1]. [i]Thomas Friedman, The World is Flat: A Brief History of the Globalized World in the Twenty-First Century, Penguin Books, 2007

[2]. [ii]ManjuSmita Dash, C.V. Krishna, "Next-Generation Retailing in India: An Empirical Study Using Factor Analysis", International Review of Management and Marketing, Vol. 1, No.2, 2011

[3]. [iii]Sudeep B. Chandramana, ArunPrem, Preetha G. Panicker, "Clicking Towards Growth in a Volatile, Uncertain, Complex and Ambiguous Environment - A Study on the State of Online Retail Industry in India," International Journal of Science, Technology and Management, Vol. 5, Issue No. 10, October 2016.

[4]. [iv]https://analyticsindiamag.com/wp-content/uploads/2016/06/Analytics-India-Companies-Study.pdf

[5]. [v]Sudeep B. Chandramana, R. Menaka, "Current Scenario of Organised Retail Industry in India – Structure, Growth, Trends, Prospects and Challenges", Intercontinental Journal of Marketing Management, Volume 2, Issue 1, January 2015

[6]. [vi]https://analyticsindiamag.com/wp-content/uploads/2016/06/Analytics-India-Companies-Study.pdf

[7]. [vii]http://www.digitalvidya.com/blog/future-of-data-analytics-india/

[8]. [viii]PwC, "Diving Retail Growth by Leveraging Analytics", 2016

[9]. [ix]EKN Benchmark Study, "The Future of Retail Analytics", 2013

[10]. [x]M S Hopkins, S LaValle, F Balboni, N Kruschwitz and R Shockley, "10 Insights: A First look at The New Intelligence Enterprise Survey on Winning with Data", MIT Sloan Management Review, Vol. 52, No. 1, 21–31

[11]. [xi]https://www.cisco.com/c/dam/en_us/.../retail/.../cisco-retail-analytics-wht-paper.pdf

[12]. [xii]Sudeep B. Chandramana, "An Empirical Analysis on Consumer Attitude Towards Organized Retailing and Unorganized Retailing", International Journal of Research in Management & Social Science, Vol. 3, Issue 1 (1), January-March, 2015

[13]. [xiii]http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/making-data-analytics-work

[14]. [xiv]http://data-informed.com/retail-analytics-market-poised-growth-challenges-remain/

[15]. [xv]http://blogs.gartner.com/robert-hetu/my-datas-bigger-than-your-data-my-datas-bigger-than-yours/

[16]. [xvi]http://www.ey.com/in/en/newsroom/news-releases/ey-pe-the-analytics-challenge

[17]. [xvii]McKinsey Global Institute, "Big data: The next frontier for Innovation, Competition, and Productivity", 2011

[18]. [xviii]https://www.gsma.com/membership/wp-content/uploads/2013/07/The-Top-Challenges-of-Big-Data-Analytics.pdf

[19]. [xix]http://www.softwebsolutions.com/resources/big-data-analytics-challenges-for-retailers.html