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CUSTOMER ANALYTICS AT BIGBASKET – PRODUCT RECOMMENDATIONS

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Customer Analytics at Bigbasket – Product Recommendations



We need to continuously improve the shopping experience of our customers. With more and more customers choosing mobile handsets to place order, browsing the entire merchandise is challenging, we need innovative ideas to make Bigbasket customer friendly.

Hari Menon, CEO and Co-founder of Bigbasket.com

Pramod Jajoo, the chief technology officer (CTO) at Bigbasket gulped down coffee, picked up his bag and mobile, ran down the stairs and hurried towards his car to leave for the airport. While he sat in the car, his phone rang and it was Sangeetha Puneekar his friend from college. Sangeetha worked in an advertising agency and had recently moved to Bangalore from Nagpur with her family. After exchanging pleasantries, Sangeetha shared her recent experience of shopping at Bigbasket.com for her groceries. Pramod was very pleased to learn that his friend was part of his customer base. Soon, the conversation turned to an interesting idea when Sangeetha shared her difficulty in placing orders using her mobile since she was not getting time in her office to use her computer to place orders owing to work pressure. She usually placed orders while traveling home in the bus. She also told Pramod that she purchased from Bigbasket.com twice in the previous week since she forgot to order a few items the first time.

During the conversation, Sangeetha introduced Pramod to two significant pain areas faced by customers based on her personal shopping experience. Sangeetha said:

At first, every time a customer logs into Bigbasket.com, they have to go through a sea of products to select the ones they need to purchase though they have a small set of regular items to purchase. Many a time, I place orders from my mobile while returning from office in the evening. Searching for the products in a small handset is painful. It invariably takes me about 20 to 30 minutes to place an order at Bigbasket.com.

Pramod shared this conversation with his team at Bigbasket.com the next day. He said to his team:

It is common that many customers forget grocery items and there are apps such as “out of milk” that helps customers with their shopping list. We as a technology team should create a solution that will assist customers with shopping list and avoid customers placing frequent orders due to their forgetfulness. Often, I tend to forget items and end up walking to the nearby store to get the forgotten item.

His team agreed that they had an opportunity to improve the shopping experience of their customers. Pramod also highlighted the fact that customers forgetting items had a significant financial impact. They may place another order at Bigbasket.com for forgotten items, which in effect meant that the logistics team at Bigbasket.com, would be making two trips to the same place possibly within a few hours, which in turn would incur additional cost for the company in terms of the supply chain cost; or the customer may choose to buy the forgotten item from a store close to his/her residence and may buy other products also from the shop resulting in lesser basket size in the future for Bigbasket.com from that customer.

The technology team at Bigbasket.com held several brainstorming sessions and simultaneously continued its research to find the most appropriate solution to the problem Sangeetha shared with Pramod, especially while placing an order on mobile handsets. In one of their follow-up meetings in May 2015, Pramod said:

E-commerce companies such as Amazon and Flipkart use product recommendations. In fact, I read in a book that Amazon earned 35% of the revenue through its product recommendations. I think we need to find a solution to our customer problems using predictive analytics. What we are trying to do is to predict what a customer is likely to buy in the future and whether the customer may have forgotten an item.

There was a consensus among the team members that they should generate an analytics solution to the problem that they were trying to solve.

BIGBASKET.COM – THE ONLINE GROCERY RETAILER

Bigbasket.com was India's largest online grocery and food store established in 2011 by a group of entrepreneurs Hari Menon, Vipul Parekh, V S Ramesh, V S Sudhakar, and Abhinay Choudhari. In 2016, Bigbasket sold more than 18,000 products and 1,000 brands operating across 12 Indian cities.

Online grocery market in India has been small, but a rapidly growing segment. According to “*The Retailer*” Ernst and Young's publication in consumer products and retail sector, during July–September 2015, India was among the top-10 food and grocery markets in the world, with an estimated size of INR 22.5 trillion (approximately USD 350 billion¹). The market has grown at 10–12% CAGR between 2010 and 2015, with food and grocery being the largest segment, accounting for close to 60% in 2015 alone. Despite this staggering figure within the segment specified, the presence of organized players has been still very low at less than 5%. One of the emerging trends in food and grocery retailing has been online grocery stores. The size of online grocery retailing market in India was estimated to be around INR 40 billion (approximately USD 0.6 billion) in 2015, which is less than 1% of the overall food and grocery sales. According to Ernst and Young report in 2015, the online grocery retailing market was growing at a rapid pace of more than 35% CAGR,² with a market penetration estimated to be at 2.3%.

According to Ernst and Young³, there is no clear winner in terms of which business model works best with online grocery retailing. Several players, following different models, have entered the online grocery market in India. According to USDA report 12⁴, online grocers increased from 14 in 2013 to 44 as of September 2014. In 2015, pure-play online grocery retailers were at the forefront of the boom in grocery e-commerce. These companies built large warehouses and distribution centers outside major cities and owned fleets of GPS-enabled vehicles in order to serve online demand. In 2015, Bigbasket, LocalBanya, PepperTap, Grofers, EkStop, and ZopNow were the main players leading this space.

¹ Source: [http://www.ey.com/Publication/vwLUAssets/EY-the-retailer-july-september-2015/\\$FILE/EY-the-retailer-july-september-2015.pdf](http://www.ey.com/Publication/vwLUAssets/EY-the-retailer-july-september-2015/$FILE/EY-the-retailer-july-september-2015.pdf)

² Ibid

³ Ibid

⁴ Rise of online grocery retail. GAIN report number IN4079

In 2015, Bigbasket.com hired the Bollywood star Shah Rukh Khan as their brand ambassador and released promotional material (**Exhibit 1**). Bigbasket.com had a customer base of greater than 3,50,000 with an order growth rate of 30% every month.

CUSTOMER ANALYTICS AT BIGBASKET

Bigbasket.com was the first online store in India. The unique selling proposition (USP) of Bigbasket.com was customer convenience, especially in cities such as Bangalore, where travel time could be high even for short trips owing to traffic congestions. Adding to this, the internet penetration in Tier 2 cities was low and many could access internet only through smart phones. Pramod said:

We estimated that about 30% of our customers place orders through smart phones. Unlike other e-commerce companies such as Amazon, Bigbasket customers place order for several products, sometimes as high as 80 in one order depending on their purchase frequency. A few customers buy all their groceries once a week and there are customers who would place order once a month. When the basket size is high, using smart phones to place order is challenging.

However, compared to e-commerce companies such as Amazon, customers at Bigbasket.com bought the same product repeatedly since these were daily use items such as vegetables, bakery and dairy products and branded foods. Pramod and his team thought that using the purchase behavior of a customer, they could predict the products a customer was likely to purchase in the future. Thus, the idea for “Smart Basket” emerged, which was created for each individual customer on basis of what he/she was likely to purchase when logged into the Bigbasket.com system.

It was possible that customers could forget to buy items, especially when they did not use the “Smart Basket” option. Thus, the idea for the “Did you forget?” feature was conceived, providing product recommendation to the customer while checking-out, based on the purchase history of a particular customer.

The “Did you forget?” use case is a unique problem to solve; the input to derive the recommendation looks primarily at the items in the basket and the customer’s purchase history. It does not look at buying history or patterns for other similar customer profiles. The problem statement is specific to the situation where the customer has already filled the basket and is ready to check-out.

DECISION MAKING AND ANALYTICAL SOLUTION

Bigbasket.Com had access to all the point of sale data. It had a list of registered customers along with their purchase history, which served as an input to building a recommendation algorithm. Data structure and results of data exploration are provided in **Exhibit 2**. Both the “Smart Basket” and “Did you forget?” features are essentially product recommendations. There were many recommendation algorithms

Customer Analytics at Bigbasket – Product Recommendations



such as collaborative filtering for recommending a set of products to the customers. E-commerce companies such as Amazon, Flipkart, and Netflix greatly benefited by using advanced algorithms for designing recommender systems. However, the problem faced by Bigbasket.com was significantly different from other e-commerce companies. The team led by Pramod started exploring various ways in which the “Smart Basket” and “Did you forget?” features could be built and improvised upon.

Exhibit 1

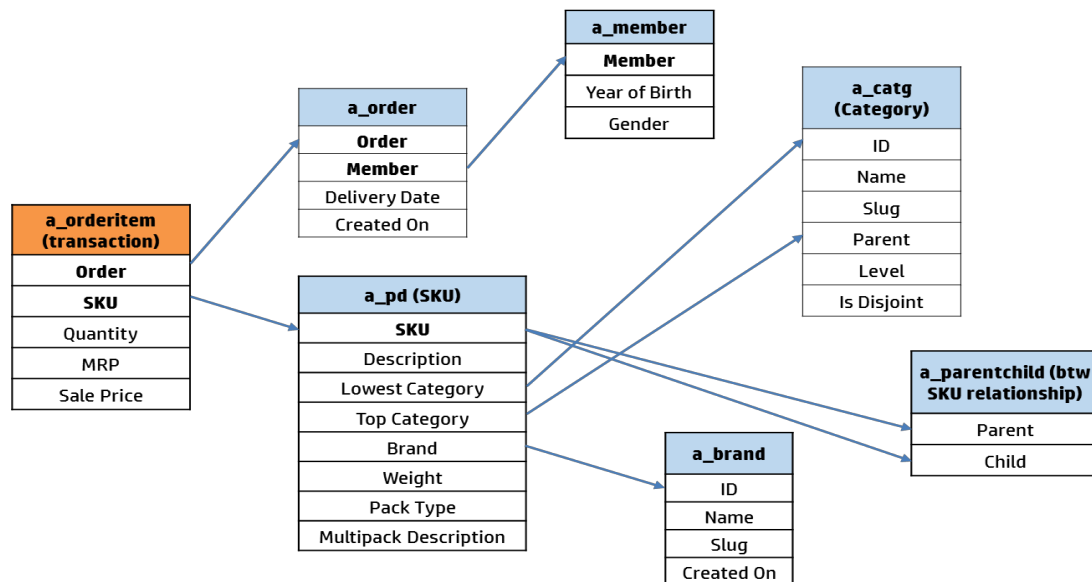
Bigbasket.com Brand Ambassador Bollywood Superstar Shah Rukh Khan



Source: Bigbasket.com

Exhibit 2

Entity relationship diagram showing how data is collected and stored by the online retailer



Source: Based on data received from Bigbasket.com