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RECOMMENDATION FOR SEMANTIC PRODUCT PERSONALIZATION

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ABSTRACT

In this generation, e-business transaction and e-shopping are carrying out the web with ease and speed. It has been a key driving force in the rapid growth of e-commerce. It is the focus of attention and technical advancements are modifying them as fast as the speed of light. Today, mobile has taken a smart entry and grabbed the full attention of the customers/users with its attractive features. They are spending much more time with mobile to deal with customers. They can use many apps in the smartphone for buying or selling the products such as-Flipkart, OLX, Amazon etc. In this paper, we have explored that how these apps are sorting the problem of new generation to buy a product smartly. To do this, Flipkart is playing an important role by providing recommendation to buy any product sitting at home.

Keywords: *Recommendation System, Collaborative Filtering, Scalability of apps.*

I. INTRODUCTION

Nowadays, Recommendations are the best source of e-commerce websites. Here, they can use input about a user interests to display a list of recommended products. In this generation, many applications (Apps) are available for online shopping that use not only the items customers purchase and explicitly rate that items, but they can use other attributes also, such as-deals of the day, time out sale, discounts for you, latest product, recently viewed products, demographic data, favourite artists, bookmark products, browsing history etc. When we search any product, categories or brands the product filtering has been improved with the latest update. We use recommendation algorithms to semantically personalize the online product/store for each and every customer/user at e-commerce sites every day. Online product radically changes based on user/customer interests, showing half price store for man and woman and latest stylish furniture for decorating home. There are two important measures of web based and e-mail advertising effectiveness like click through and conversion rates, vastly exceed those of untargeted content such as advertisements and top seller lists.

Recommendation algorithm operates in a challenging environment which includes consideration of following-

a) Huge amounts of data.
b) Producing high quality recommendation.
c) New customer has limited information.
d) Regular customer has excess information based on purchases and product ratings.
e) Customer data is volatile.

Here, the problem of recommendation can be solving by using Traditional Collaborative Filtering (TCF), Cluster models and Search Based Methods (SBM), Collaborative Filtering (CF). In this paper we have explored above three recommendation algorithms in real-time scales to bulky data sets and provide high quality recommendation. These days, every person wants to save their time especially in buying and selling the product i.e. they are using popular apps in smartphone to do their work easily. Many apps are in the race such as Flipkart, Amazon, Snapdeal, Myntra etc. but Flipkart is so much popular to any product in this generation. Here, customer can purchase and rate the product freely. Here, we have stored top 20 most popular apps in which we have found that flipkart is scoring highest percentage than other apps. As we can see in fig.1 flipkart is one of the most popular app for online shopping.

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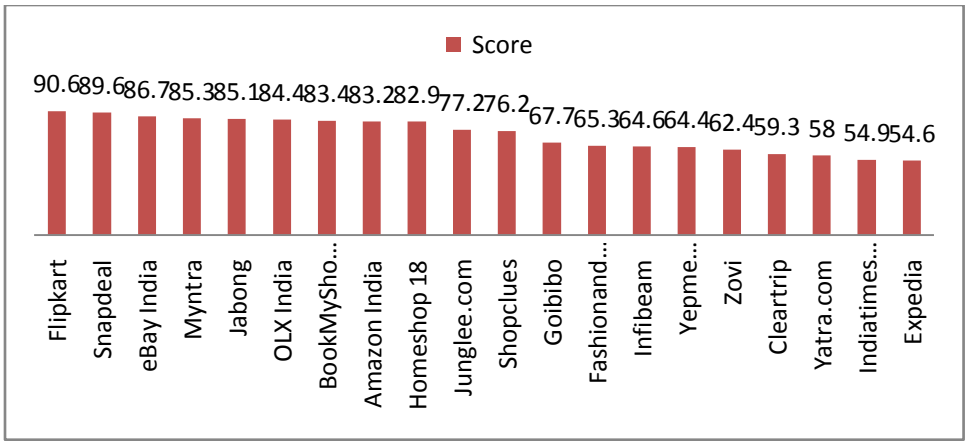

Fig.1 Popularity of Flipkart apps[9].

II. REVIEW

In this generation, most of the e-commerce companies are entering in the virtual field with the help of smartphones. Using this new technology, user can search many places or products like-best hospital,college,bank, health care, insurance, home appliance, clothes,electronic products,books etc. through one click only. During the last few years, that work did by PC and Laptops. But, now users are using latest smartphone with high capacity to do this. Users can use many apps in smartphone such as Flipkart,Amazon,Myntra,OLX,etc. and they can do online shopping or selling products sitting at home or office. According to Dayer et al. Logistics is one area with high growth potential. Few years ago, users were facing problems in searching the products because they were limited and they thought, that how they can return the product if they don't like. But nowadays, customers can see many products and they can purchase and rate very easily. Also they can give the payment on the delivery of the product to the delivery boy. Really, it has been an easy convenient to shop for every users/customers. To do this, Flipkart has taken first step in this regard by introducing Flipkart.lite. It allows the customers to online shop i.e. anywhere/everywhere. It is being more users friendly and provides personalized offers, social experience and many recommendations to customers which help them to select the product very easily.

III. RECOMMENDATION ALGORITHMS FOR PERSONALIZATION

Nowadays, most recommendation algorithm can start by finding a group of customers/users whose purchased and rated items overlap the newest user purchased and rated products. Time to time items always eliminates from store that has been already purchased or rate by customers and provides the new stock to the user. Every day customer gets new offers with discount. Customers/users are free to select the item by filtering or sorting option. At flipkart.com the entire product can be filter by discount wise, price wise, size wise, brand wise and many more. There, customer can sort the data according to popularity, price and newest first items. In this, collaborative filtering and cluster models are popular for personalizing the product. Similar product can be searched by search based methods and item to item collaborative filtering.

A. Traditional Collaborative Filtering (TCF)

This type of filtering represents a customer as a number of dimensional vector products. Here, customer can rate the product positively or negatively. Using algorithm the components of vector multiplies and inverse frequency to make known product much more relevant. This vector is sparse for all the users. As we know that, the algorithm always generates recommendations based on a similar user who are using various methods as well. Ranking the product is the common technique to search the similar users. Those, who are purchasing a particular product, Collaborative filtering shows various products at a time for the regular user, it provides easy way to see different types of product with discount.

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B. Cluster models

In this, models divide the user base into many segments. By the cluster models we can find the users who are similar choice to by the product. This algorithm can help to assign the user that contains the most similar users or customers. By record of purchase and rating the product of customers, algorithm generates recommendation to search many things in cluster because segments are created using a cluster or few applications are used to determine the segments. Cluster algorithm always makes a group of most similar user/customer to form of segment because over large data set is known as impractical. So that, most application always uses various forms of cluster.

To do this, algorithms typically starts with a set of segments that contains randomly selected customer. After that, they repeatedly match the existing customer to create a new or merge the segments. If data set is very large then in this situation sampling and dimensionality reduction is necessary for this and if the algorithm is already generate the segment, then it estimate the similarity of user's to vectors that summarize the segment, after that select those segment which have strongest similarity and classifies the user accordingly. As we know that, cluster models have better online scalability and performance. Here, it compares the user to a controlled number of segments.

C. Search Based Method (SBM):-

This method works on the problem of recommendations as a search of related product. In this, the algorithm provides a query to find out the popular product by the similar customer. If a customer buys a books then the system recommend other books also. This is the work of recommendation system to find the relevant and interesting products and cart feature is based on the particular items in the customer's cart where customer can select their items freely to buy or rate them. In fig.2 is showing our recommended product and shopping cart recommendations, which always offers customers product as sample based on the items in their shopping cart.

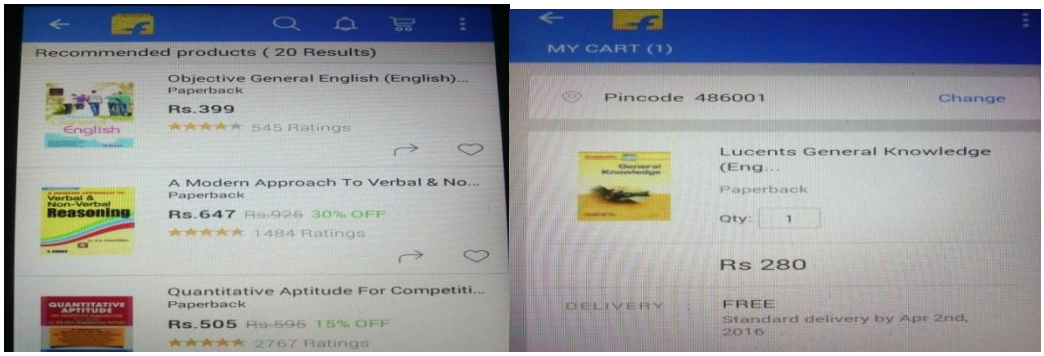

Fig.2. Our recommendation and My cart feature on the Flipkart.

D. Collaborative Filtering

In this generation many applications are using recommendations as a targeted marketing tool on the web making, web sites pages, Such as-craftsvilla.com, flipkart.com and many more. At present, people have many apps for online shopping. By clicking on the "Recommendation" user can see the home page where they can filter their recommendations product wise, subject wise and they can rate the latest product and previous purchases and also they can see why products are recommended. Fig.3 is showing below to represent price wise filtered and popularity wise sorted products which we have searched in one month and we have seen many more interesting & knowledgeable books in short timing.

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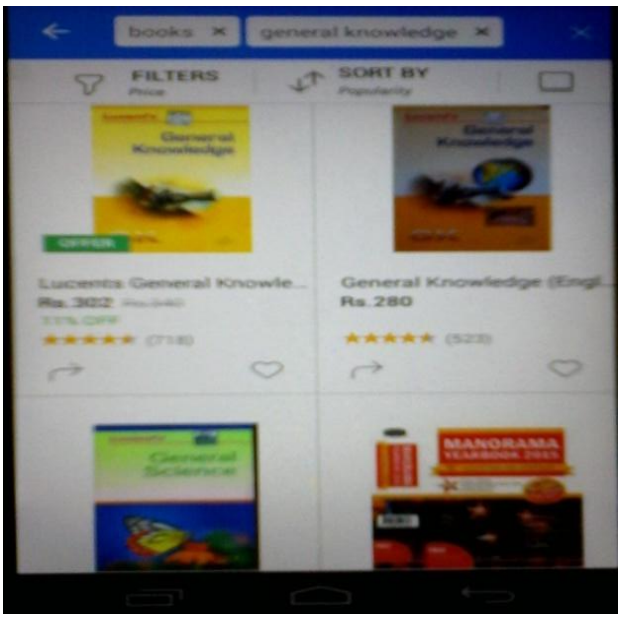

Fig.3 Filtered and Sorted products by popularity/price on flipkart.

Apps like flipkart and amazon extensively uses algorithms for recommendation to personalize the web site to each users or customers interests. For this, collaborative filtering option, scales to large data sets and produce high quality in real time.

To filter the data sets product wise, collaborative filtering first match each purchased and rated items to similar items, it combines those similar items into a recommendation list. For doing this, algorithms always builds a table of similar item to determine the most similar match that customer try to purchase together. Computation in tabular format data could be very quick depending on the purchased or rated items.

IV. SCALABILITY OF FLIPKART

Nowadays, peoples are buying online products and flipkart is showing the world that anyone can be satisfied by online shopping. Using flipkart 50 million customers have the best shopping experience by the mobile only. Customers and users can see several catalogue items. It has many more different types of product. Customer can see them according to their choice. For example, if customer selects electronic product then they can see the entire available electronic product also and it can be possible by algorithm which we have explored above it always recommends highly correlated similar items i.e. its recommendation quality is excellent. Figure is showing below to represent different types of online products which we have selected from this app.

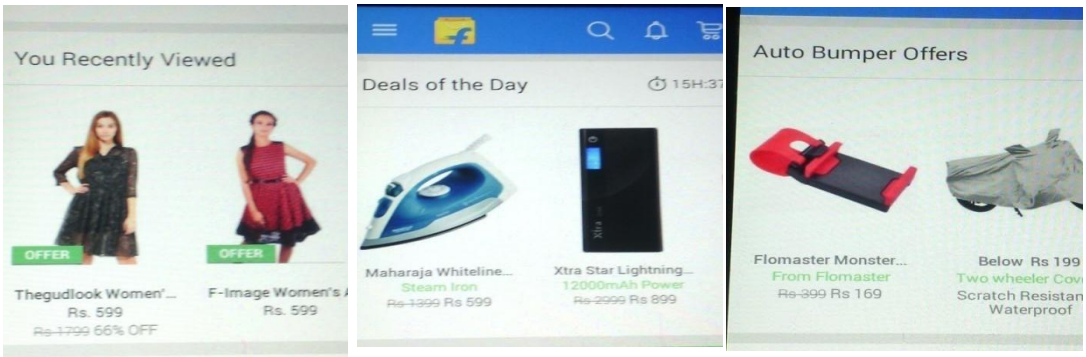

Fig.4 Online product of flipkart app

V. CONCLUSION

Nowadays, new generation likes to shop online and see many more products. For this, recommendation algorithms provide an effective way of targeted marketing by creating a personalized shopping experience for all the customers/users they can see many more personalized product day by day on flipkart because recommendation algorithm is working over large customer base and product catalogue and it also able to react very soon to change the user's data and compile that with the number of purchases and ratings. In this paper we have explored about flipkart app where customers/users can see deals of the day, product with discount, time limited product and many more. We have shown the shopping cart recommendation and popularity of flipkart app. By this app customer can search their product freely according to their requirement i.e. we can say that it is an interesting example of personalization where we always searched our required product in a personalized way.

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