

DESIGN TO UTILIZE SOCIAL MEDIA DATA TO IMPROVE E-COMMERCE BUSINESS

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ABSTRACT

A tremendous increase in the involvement in online shopping of products by the people has been become noteworthy these recent years. So the count of e-commerce sites also increased noticeably. This has been resulted in competition between different e-commerce sites. One of the ways of improving any business is by providing appropriate advertisements to the appropriate customers. The proposed framework tries to improve the individualized product recommendation from e-commerce site to its very new users who does not have any account as well as previous product purchase records or product view records in e-commerce site. To achieve the purpose solution makes use of demographic information and friend's network information available on social media site.

Keyword: - e-commerce, advertisements, demographic information, social media site

1. INTRODUCTION

E-commerce means electronic business which utilizes electronic medium, for example, web for exchanging of merchandise and enterprises including the upkeep bolster. It includes the utilization of technologies used for information communication and transferring of funds electronically for exchange amongst shoppers and associations, association and association or purchaser and customer.

There is a necessity to attract the customers even though 240 million users of e-commerce are present in India only because there is high competition between different businesses online. But 95% of the people do not buy any item at their first visit or even though they have created an account in e-commerce site. So advertisements matters a lot to increase the business. It is possible to make consumers to get attracted towards the e-commerce by publicity and advertisements of the products and services provided by them. There are various platforms available for advertisements like blog articles, videos, e-mails, publishing articles on magazines, journals, newspapers, google AdWords, posting articles in social media sites etc.

All these promotions must be appended with proper product CTA (call to action). Here CTA refers to a marketing term which is utilized with the end goal of promoting and offering. CTA can be incorporated with different marketing materials like call scripts, brochures, advertisements or web pages. CTA can be exceptionally basic which ask for the customer to purchase the item like "watch this video" or it can be solid reason that incite shopper to make prompt move like "offer lapses today". On the web CTA exists as banner, graphic, button or text which prompt the user to click them. At the point when the client clicks any of them, the client will be diverted to the internet business website.

Web-based social media advertisements can be very useful for online business based on the fact that there are 216.5 million clients of web-based social networking in India itself. So there will be a good success in business if the e-commerce sites have properly present themselves to the users on social media with proper product CTA. This paper is about how an e-commerce site can propose products to the customers who do not own an account in e-commerce site but in social media site and does not have any purchase record in the e-commerce site. People use their accounts on online social media sites to store their personal information like age, gender, location, education, working status, marital status, hobbies etc. So e-commerce sites use this information to individualize the product suggestions to the users so that product information will reach to the users who are willing to purchase them.

This paper proposes a new idea for advertising the product for the customers who do not have any purchase history, using their information on the social networking sites. People post many microblogs on their social networking account. To recommend the product using microblogging information involves the challenging task of transferring social media properties to the features that ease the intended purpose. To address the problem, the solution tries to categorize the products on e-commerce site based on the interest information of the people on online social media site.

2. LITERATURE SURVEY

Recommendations play a serious role in modulating, up and attracting the opinion or interest of somebody on something. Usually people are more influenced by the face-to-face recommendation that compared to any other way of recommendation. One of the ways is advertisements. But these advertisements attract the eye of the consumers if they are highly associated with customers' interests. So there exists a vast research on this field of recommender systems.

2.1 Recommendation Systems

The matrix factorization approach specified in [1] permits exemplification of more data. It depicts both products and customers by vectors of factors acquired from item rating patterns. High correspondence between item and user factors helps in recommendation. These techniques have turned out to be well known in the current years since it is furnishing great adaptability with precise expectation. In addition to that, they provide more flexibility in modeling various real life situations.

There are many investigations that emphasis on the matrix factorization methods on web information for building recommender systems. The method specified in [2] concentrates on adapting the proportional hazards modeling approach in survival analysis for the users' future purchase purpose suggestions and proposes a new estimation model to explicitly embed time in an e-commerce recommender system. This model gauges the probability of both a client making a subsequent buy of a specific item at a specific time

The solution proposed in [3] focus on improving the poor prediction in recommender system by using the users social media information. The social media information includes social tag information and then getting the users trusted fields and then incorporating that information in matrix factorization approach for prediction purpose.

The matrix factorization approach is also used in [4] where the Explicit Factor Model (EFM) developed to generate recommendations along with explanations, also it also keep high prediction accuracy. It initially obtain explicit product features (i.e. aspects) and user opinions by phrase-level sentiment analysis on user reviews, then generate both recommendations and disrecommendations according to the specific product features related to the user's interests and the hidden features learned.

In article [5] factorization machine called libFM is developed. Factorization machines (FM) are general method because they can imitate most factorization models just by feature engineering. LIBFM is a software implementation for factorization machines that features stochastic gradient descent (SGD) and alternating least-squares (ALS) optimization, as well as Bayesian inference using Markov Chain Monto Carlo (MCMC).

There exists a vast ocean of matrix factorization method applications in developing different recommender systems for startup users. Article [6] focuses on predicting the ratings of the users which then can be used for product recommendations. It takes into account the demographic attributes of the users that are supplied explicitly by the users and also the user generated texts.

Matrix factorization approach is also used in [7] for cold-start app recommendation using user model constructed from twitter followers. It uses the twitter ID of users who likes an app and forms the latent groups. This latent group and app mappings are used for estimating the probability of liking an app by the new user. This probability is used for app recommendation.

2.2 Cross-Domain Recommendations

One of the key techniques for cross-domain recommendation is Transfer Learning [8], [9], and the idea is to extract transferable knowledge from the source domain, and further apply it in a target domain. In article [10] a collective matrix factorization model is proposed which is used for relational learning which is concerned with estimation unknown values of a relation, when a database of entities and observed relations among entities are available. This relation estimation can be used for recommendation purpose.

Li [11] attempted to transfer user-item rating patterns from an auxiliary matrix in another domain to the target domain through Codebooks. Hu [12] and Zhao [13] extended transfer learning to triadic factorization and active learning for cross-domain recommendation, respectively.

2.3 Social Network Mining

There exists a method in [14] that links buyers and sellers by detecting the commercial intentions of the users in twitter. This involves processing the tweets for identifying the commercial intents of user by detecting keywords in the tweets and then making the sellers to contact those interested users.

The article [15] proposed techniques of helping the e-commerce sites for recommending the products using the demographic features like gender, age, marital status, education, career, interests.

The recommendation method in [16] have mined the utilization history examples of the objective client and the related clients from the web and proposed clients' favorable substance which are obscure to clients. Utilizing social media data the framework accumulates the related history for clients. The framework additionally prescribed the different sight and sound substance like articles, TV programs, notices, video and sound, the framework could apply the different clients' history about the different substance. Since the framework is connected to the social media, the data about companions and gatherings can be utilized as a part of the suggestion calculation.

The method proposed in [17] an approach to publicizing the items amid specific time stamps in the videos by considering video semantics, client shopping inclination and surveying behaviour feedback. Incremental Co-Relation Regression (ICRR) model is utilized for develop the relationship amongst video clips and items. User Preference Diffusion (UPD) is utilized under the structure of Heterogeneous Information Network, to develop client item relationship from two distinctive web based business stages.

There are many other R and D works on recommendation systems based on social networking sites information. There exists a most significant work in [18], [19] wherein they concentrate on brand or category level buy inclination in view of a prepared classifier. They consider just traits like age, sex and face book likes. Likewise there does not exists any technique to exchange heterogeneous data from web-based social media to data that can be utilized straightforwardly in online business webpage for item suggestion

3. RECOMMENDATION SYSTEM DEVELOPMENT

This section describes required system features, system design for the proposed system.

3.1 Required System Features

3.1.1 Social Media Site

Register and Login:

If the user does not have any account in social media site, then user should able to create an account there in social media. During registration, information like age, gender, education, marital status, interest, occupation, ownership details of the user must be collected. Once the user owns an account in the social media, then he/she should able login using their user ID and corresponding password.

Edit Profile:

Once the user login to the social media account, he/she should have the provision to update or edit the account details. This will help in updating the recommendations according to the revision of the user information.

Accept/Reject Friend Request:

In social media site, any user can get a friend request from any other user. But user should have the option to either accept or reject the friend request.

Send Friend Request:

In social media site, the user should have the provision to see the other users available and should be able to send the friend request according to his/her wish with whomever they want to make friendship.

Posts:

In social media site, user should have the facility to share their wish, thought or the product details that they have purchased on e-commerce site on their timeline. The posts that they made on their timeline must be visible to their friends.

Advertisements:

In social media site, user should get the advertisements of products that are present in e-commerce site. The advertisements must match with the user's interests. These advertisements must include a link which leads the user onto the detailed product information on the e-commerce site.

3.1.2 E-commerce Site User Module**Provide review, ratings and purchase the product:**

The link embedded in the advertisements of the products in social media must direct the user on to the e-commerce site. User should login to the e-commerce site using social media credentials. Then user will be directed to the detailed information of the product that he/she has selected in the advertisement list. There user must be given with the option to purchase the product. During purchasing, user must provide his/her ratings and review about the product.

Share on Social Media:

Once the user purchased the product, he/she should be given an option for share/post the information of the product purchased on their timeline in social media site. This will allow the friends of that user as well to see that product information.

View all products:

Once the user login to e-commerce site using social media credentials, he/she should have the facility to see all the other products in the e-commerce for which he/she has not received any advertisements in the social media.

3.1.3 E-commerce Site Admin Module**Add the product and its Description:**

There should be administrator for the e-commerce site. The main duty of the admin is to add the product into the e-commerce site. During this process he has to give all the relevant information about the product. This information will help the user to get the overall idea about the product. The admin should also add the generalized features of the people who may like the particular product.

3.2 System Design

The proposed system is designed to improve the personalized product suggestions for the very new users, who do not have any old records of product purchases on the e-commerce site by using the help of information shared on social media for the purpose of studying the interests of the new-sprung users. The following section provides information about design for the solution.

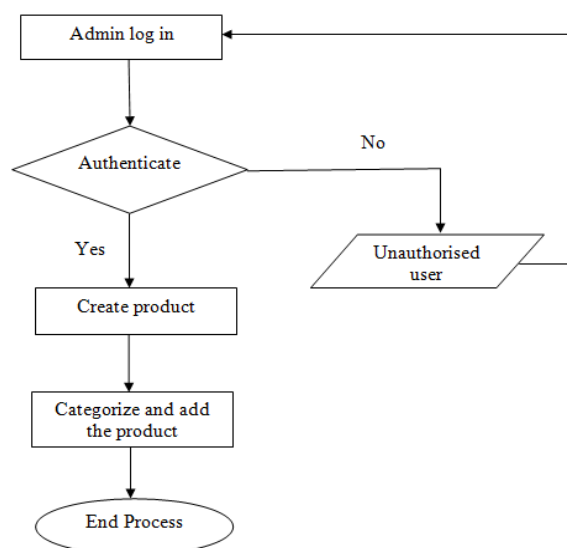


Fig-1: Flow chart for e-commerce admin

Fig-1 shows the flow chart for administrator of e-commerce site who is responsible for adding the products to the website. In the proposed solution, the administrator will first login to the website. Whenever a product is available for sale, he/she will add the product to the website by specifying its details. Also admin will specify the features of users to whom the product may be useful. Finally the product will be added to the e-commerce site.

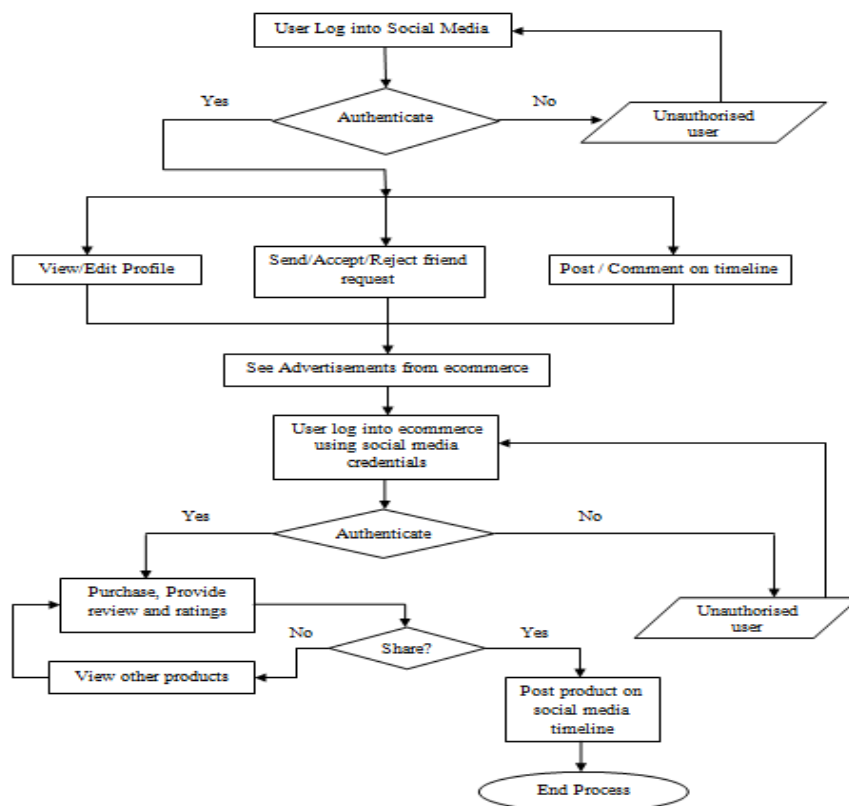


Fig-2: Flow Chart for User

Fig-2 shows the flow chart for user. If the user have don't have any account in social media site, then he/she has to get registered. Once the registration is complete, the user can login to the social media site. In social media, user can perform various activities like editing the profile, send/accept/reject the friend requests, post in the timeline. Based on the activities and information of user in social media and products that are available in the e-commerce site, the user will get advertisements about the products that estimated to be useful for the user.

To buy the product, user needs to click the CTA available in the advertisement. This will lead to e-commerce login page. User can login using social media credentials. In social media, he/she can buy the product, provide review and ratings and also can share the product purchased in social media timeline.

4. CONCLUSIONS

The project product CTA for new-sprung users of e-commerce site using social media information provide a fruitful solution for improving the recommendations which will provide a positive hike in the business for the e-commerce site. The various advantages of the solution make it worth for large scale implementation.

One of the advantages of the proposed solution is that user need not to maintain any account in the e-commerce site to get the recommendations. The second is that the solution will provide the advertisements to the user even if he/she has not done any activities on the e-commerce site like purchasing the product, view the product etc. The third point indicates that e-commerce site can reach out to the large volume of customers. Instead of always evolving around already available users, the solution enables the e-commerce site to attract the new users by providing proper advertisements that match with their interests. The fourth advantage is that, e-commerce site is not required to collect information about the customers which is the tedious task if he the non-member of the e-commerce site. It can use the already available information in the social media site. It also provides security since users' private data does not move outside the social media environment.

5. FUTURE ENHANCEMENT

The solution can be enhanced by attempting to recognize more qualified trait from the online networking about the client, which will help in appropriate evaluation of the client's interest. The solution may be combined with already available solutions like linked product recommendation that will provide recommendations of products that are required for the products that are previously purchased. Notwithstanding the demographic qualities, appropriate ways should be recognized for gathering the psychographic characteristics like social class, way of life, conduct, feelings and values and so on can be used to enhance the venture. Further enhancement could be matching all the attributes based on the weightage on each attributes and ranking the results based on number of attributes matched along with the weightage.

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