

The Indian Banking Scenario And The Scope For The Use Of Group Recommender Systems- A Perspective

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Abstract

Indian banking system is affected by several forces-good and bad. In spite of the resilience of the banking system, there is a greater threat of collapse perceived by some. A lot of wastages and unnecessary activities are continued by the banking system in India, where there is a possibility of removing these wastages through the implementation of the Group Recommender System. This write up attempts to discuss these challenges and also the scope available to the banking system through the implementation of the Group Recommender System.

Keywords

Banking organization, Group Recommender System, Big Data.

Introduction

The Indian Banking Sector is passing through a period when challenges not only affect the banking System, but also affect the total economy of India and in turn influences the global economy as well. Currently, some major challenges are staring at the banking sector. The stake holders of the banks are in low considering the recent events that shook the depositors. Many banks are operating at the threshold of trust-deficit of the citizens, whether they are involved in the banking activities or not. The rise in bad loans is the greatest risk of the banks due to low quality of the assets. The 'provision' of money with the banks can help the banks to protect themselves from the bad loans which require capital adequacy. The foreign exchange situation has led to unhedged forex exposure. It is a challenge for the Indian banking sector to manage the Balance Sheet. Further, the technological adoptions and usage have challenged the employees who are one of the major stake holders of the banking system. The health crisis resulting out of the ongoing pandemic has caused an economic crisis as well. But fortunately, the banking sector has shown certain resilience despite the financial turmoil. Where the liquidity position was robust and where the capitalization was reasonable, the banks have shown stability and was free from stress. However, unless apt actions do not follow in the immediate future, large scale insolvencies cannot be ruled out following a wave of bankruptcies and the banking sector will be shaken. In India, to repose faith among the depositors, the government has taken steps like insuring the fixed deposits up to rupees five lakh which is too little and too late. In this context, the banking sector will do something substantial by investigating the depositor perceptions and stakeholder views that might help formulation of appropriate policies that will stand the

banking sector in good stead which will be of immense use for the economy in general. A study of application of the Group Recommender System explores to light the type of items that need to be emphasised for strengthening the banking sector.

Objectives:

This paper attempts to achieve the following objectives:

- i. To analyse the information overload and fraudulent information in the banking system.
- ii. To explore the role of Group Recommender System in banking.

Methodology:

For the purpose of this paper, an analytical and descriptive methodology is used. Secondary data from the published sources are accessed and analysed to arrive at certain inferences. The sources of data from the web links and websites are acknowledged as references.

Information Overload And Fraudulent Information

“The increase of the burden of information processing, have made many complexities for customers and companies in the context of ecommerce. Companies find it harder to survive due to more and more competition. Also, as information technology is growing in an exponential rate causing a Big Data scenario, banking industry like many other industries in many parts of the world are trying to change the traditional methods and adapt in to these new technologies. One of the most fundamental changes of banking industry is the movement from traditional banking to more electronic banking” (Abbas Asosheh, et. al., 2008). This trend is increasingly experienced in India as well. As a result, the banking customers are pounded with information many times disturbing, irritant and repelling. The prevalent situation is such that the banking public is depressed, distrusted and disengaged and as the bankruptcies of the individual households which are predicted followed by the institutional bankruptcies of the banks, a collapse of the system cannot be ignored. Recommender Systems are now increasingly used in ecommerce and retail areas to filter and provide customised information that would help build the banking public’s confidence in the system and help the banking system to function with the multiplier effect which is the foundation of the banking principle. Recently, the Indian public was astonished by the failures on the internal and external control mechanisms of an institution which is one of the leading public sector banks viz the Punjab National Bank that led to the alarm of a fraud. Other banks and Non-Banking Financial Corporations like the Lakshmi Vilas Bank, Yes Bank and the safety situation of several other banks terrified all stake holders, many of whom lost their money. “The Great Indian Fraud: Serious Frauds Which Shook the Economy” (Smarak Swain, 2020) gives even more stories of the incredible financial scams that have engulfed the Indian economy like the bank frauds, stock market frauds, insider trading, start-up frauds, corporate frauds, origin frauds, Ponzi schemes and pyramid schemes etc. and the fraudsters behind these scams. The credibility of the banking sector has nosedived so much so that the need for new regulations with a high degree of

supervisory mechanism and high levels of corporate governance are advocated vehemently. These require a strong Information Technology and Artificial Intelligence enabled platform. Can the strict implementation of International Financial Reporting Standards help the banking sector in India? Can the usage of such platforms like the Group Recommender Systems be of help for more customised information for the banks and the customers which can motivate better banking business? Can better trust be generated by a combination of the group Recommender System and the strict compliance of IFRS that will go a long way for the strengthening of the Indian economy? These questions need to be addressed with appropriate empirical and closer analysis. In this situation, a look at the group Recommender System in the banking industry will be meaningful.

Group Recommender Systems

The endeavours and advancements in IT have successfully developed systems that can integrate various aspects and behaviours of the user in almost real time. With advent of such solution addressing the veracity and velocity of data it is pertinent to explore the application of suitable data analytics in Indian banking sector too. In order to predict the interest of the user, personalised recommendations are needed and a system which supports such decisions can be termed as recommender system. It is normally experienced that the individuals, while taking decisions, are influenced by the groups to which they belong and socialize and therefore, there is a need for a system that can provide a recommendation system for a whole group. Such a system is termed as Group Recommender System. This is more so helpful when group members are unable to come for better face-to-face negotiation or their preferences and choices are not clear in spite of meeting the members. Under such circumstances, a Group Recommender System analyses all the preferences and helps to arrive at a common ground acceptable to all the members of the group. This certainly is a tedious and difficult task as the interests and choices of everyone has to be kept in focus to reach the final decision. Different strategies like majority-based, consensus-based, and border-line based are used to seek assistance in this process. According to Kadam (2020), “There are numerous techniques for preference aggregation that is generally divided into three categories:

Majority-based strategies which use the most popular items for aggregation (e.g., Plurality Voting)

Consensus-based strategies where preferences of all group members are considered (e.g., Average, Average without Misery, Fairness)

Borderline strategies which only considers a subset (e.g., Dictatorship, Least Misery, Most Pleasure). For understanding how these aggregation strategies are computed, let’s consider a small group of friends and their ratings for 10 items”

Ratings for 10 items by Emma, Sara and Jay. (“An Introduction to Recommender Systems”, Nimisha Kadam,2020).

These examples can be extended to other industries also. Recommender systems are commonly and popularly used by different industries. The same can be used by the Banking Industry also to benefit for the industry, customers and the economy. An example shown by Srivastava, T (2016) is useful to be mentioned here. "Today, every industry is making full use of recommendation systems with their own tailored versions. Let's take banking industry for an example.

Bank X wants to make use of the transactions information and accordingly customize the offers they provide to their existing credit and debit card users. Here is what the end state of such analysis looks like:

Customer Z walks in to a Pizza Hut. He pays the food bill through bank Xs card. Using all the past transaction information, bank X knows that Customer Z likes to have an ice cream after his pizza. Using this transaction information at pizza hut, bank has located the exact location of the customer. Next, it finds 5 ice cream stores which are close enough to the customer and 3 of which have ties with bank X.

Various areas of data mining are devoted to extraction of interesting, implicit, useful and novel patterns from data or information such as the one above (Data Mining Concepts and Techniques by Jiawei Han Micheline Kamber Jian Pei. Let us consider the deals with this ice-cream store:

Store 1 : Bank profit – \$2, Customer expense – \$10, Propensity of customer to respond – 20%

Store 2 : Bank profit – \$2, Customer expense – \$10, Propensity of customer to respond – 20%

Store 3 : Bank profit – \$5, Customer expense – \$12, Propensity of customer to respond – 20%

Store 4 : Bank profit – \$6, Customer expense – \$12, Propensity of customer to respond – 20%

Store 5 : Bank profit – \$4, Customer expense – \$11, Propensity of customer to respond – 20%

Let assume the marked prize is proportional to the desire of customer to have that ice-cream. Hence, customer struggles with the trade-off that whether to fulfil his desire at the extra cost or buy the cheaper ice cream. Bank X wants the customer to go to store 3,4 or 5 (higher profits). It can increase the propensity of the customer to respond if it gives him a reasonable deal. Let's assume that discounts are always whole numbers. For now, the expected value was :

Expected value = $20\% * \{2 + 2 + 5 + 6 + 4\} = \$ 19/5 = \3.8

Can we increase the expected value by giving out discounts. Here is how the propensity varies at store (3,4,5) varies :

Store 3 : Discount of \$1 increases propensity by 5%, a discount of \$2 by 7.5% and a discount of \$3 by 10%

Store 4 : Discount of \$1 increases propensity by 25%, a discount of \$2 by 30%, a discount of \$3 by 35% and a discount of \$4 by 80%

Store 5 : No change with any discount

Banks cannot give multiple offers at the same time with competing merchants. You need to assume that an increase in ones propensity gives equal percentage point decrease in all other propensity. Here is the calculation for the most intuitive case – Give a discount of \$2 at store 4.

Expected value = $50\%/4 * (2 + 2 + 5 + 4) + 50\% * 5 = \$ 13/8 + \$2.5 = \$1.6 + \$2.5 = \$4.1$ (“Exploring Recommendation System (with an implementation model in R)”, Tavish Srivastava, 2016). There are many more uses of group Recommender Systems for the banking industry. The determination of interest rates, determination of banking products and services, identification for the causes of NPA, methods of correction of NPA all can be attended to by the Group Recommender Systems. The best part of the recommender system is that they can personalise and customize services for the customers of ecommerce, promoting one-on-one marketing etc. Banking is also using the practice of customization of several products. Even a cheque leaf is also customized giving the name of the customer printed on the cheque leaf. Similar recommender system applications are seen in movies, music, television programs, books, learning materials etc. This can be widely extended to banking as well, which at present is not utilizing widely. Amazon, Netflix, LinkedIn and Pandora etc. leverage the recommender system to help the users find out appropriate items for them. The banks can similarly find out the appropriate banking products and services for better customization and involvement.

Conclusion

As Kadam says “finally, I would conclude that most people socialize frequently rather than hanging out alone. There might be few introverts in the group who may not come up if they are dissatisfied with the decision. Therefore, knowing the personalities of each member in the group and drawing recommendations which will be applauded by everyone could be a highly accepted approach for the recommender system.” (N.Kadam,2020). In the field of banking also, there is a possibility of widely using the Group Recommender Systems and making the banking sector more customer focussed and customer oriented. At a time when the several banking reforms are afoot to improve banking efficiency and promote the customer trust including the financial standards made internationally acceptable, the use of Group Recommender System will be an apt approach. One way of effecting this is through a collaborative filtering system. The collaborative filtering algorithms need the active participation of the users, an easy method to represent the users’ interests, and the algorithms that are helpful in matching the people with similar interest. For enabling this, the user should express preferences by rating items (in the case of banking, the banking products where the ratings can be seen as an approximate representation of the user’s interest in the corresponding domain), the system matches this user’s ratings against other users and finds the people with most similar choices, and in the process, the system recommends items that the similar users have rated highly, but not yet rated appropriately.

Thus, it can be seen that banking sector can make the best use of the available GRS for its own efficiency as also for the improvement of the economy by avoiding several items of wastages and losses through duplication and unnecessary efforts in marketing, product and services generation etc.

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