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Intelligent Shopping Recommender Using Data Mining

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Abstract – The mode that people consume on the shopping gets more and more popular, it contributes the economic value in modern society. But it carries a series of problems to the consumers, such that the users can choose the expected product hardly. The paper mainly presents the fuzzy theory to deal with the users' behavior data, and the identification of customers taste for the product recommendations. A whole personalized recommendation model is built, and proposed evaluation and optimization function are applied to improve the accuracy of recommendation system with case study. Finally, the customer satisfaction function is better verified by the proposed system.

***Key Words*: Data Mining.**

1. INTRODUCTION

With the rapid development of the technology, the shopping trend seems to be more and more necessary in peoples' daily life, and it is now changing peoples' consumption pattern, especially in some developed regions. The money which people spend through the shopping gets more and more, so it contributes the economic value in modern society, but it carries a series of problems to the consumers, such that the users can find and choose the expected product hardly. The product offers to the customers is universality. In this case, the personalized recommendation system was created, but the recommendation system has the universality, it causes the reducing accuracy of the recommendation. In recent years, there are many scholars who are starting to optimize the personalized recommendation system, and using this way to satisfy the different consumers' personal needs.

[4]The research of decision methodology and optimization based on customer purchase behavior is a hot point in shopping malls. Returns logistics method is used to determine whether the customer's returns aspiration are accepted or not, considering the customer's behavior. And the sensitivity of the time and satisfactions are considered as well.

Personalized recommendation of products for the customers is one of the factor to gain business profits as well as customers satisfaction. Today's products recommendations has universality but the customer buying behaviors differs based on their type and their interest. Advertising carries with it the ability to persuade, power to influence one's mind and mould the future. Advertising can be described as a way of communicating to the market in order to promote or sell something. It can be a firm product, business service. In order to advertise, the messages are paid for by various agencies and sponsors which then appear in various forms of media like newspaper, television advertisement, direct mails, radio advertisement, magazines, emails, text messages, blogs and websites. Advertising is not only used to promote and sell but it has the power to persuade the mind and shape density of the market. The company's profit margins and economy can be taken to new heights with the power of advertising. Advertising meets the short term goals of a product like its information, generating awareness, improving credibility and productivity and also long terms goals which include maintaining a brand image of the product, adding emotional value to the brand and reaching a positive reputation in the market.

[4]The process of finding and analyzing useful patterns in a large amount of data is what is called Data Mining. Due to growing generation and increased work in development of Information Technology, vast amount of data is collected in various areas. This data is analyzed and maintained in a database in each sector. Hence, data mining can also be defined as an analytic operation design to analyze the data, mainly the so called "big data", and find consistent patterns and relationship that are systematic between the set of data variables, and then validating those findings by applying them on new subsets of databases. The patterns and the relationship so obtained is used to store and manipulate this data and use them in further decision making.

Data mining can also be defined as a logical process that is used to explore and search through large amount of big data so as to find more useful data in it. Previously, the pattern finding technique was not used and the data collected was just a collection of databases but with the technique of finding patterns in the data, more utilization of the data is being obtained which helps to make better decisions for the development of the business. Usually data mining is processed in three steps, mainly Data Exploration, Pattern identification and Deployment.

[5]During the first step of data exploration, the big data is processed and transformed into another form with only important variables left. This helps to find the nature of data and finally the problem is determined. After going through the first step of data exploration, the data gets refined and only specific variables are left which makes it go through the second step of pattern identification. This step involves the identification and choosing of patterns to apply them on new databases. After the second step, a specific pattern is obtained which can be now deployed on the new data sets, completing the process of data mining.

2. SYSTEM ANALYSIS

2.1 Existing System

Users can find and choose the expected products hardly. Current recommendation system has the universality thus reducing the accuracy of the recommendation. Recommendation of products has universality but the customer buying behaviors differs based on their type and their interest. Existing system provides universality that is general offers are circulated to different sections of people without identifying their individual interests. This may lead to decline in sales and business. This system has drawbacks like No personalized recommendation, Lack of Customer Satisfaction and is Less reliable.

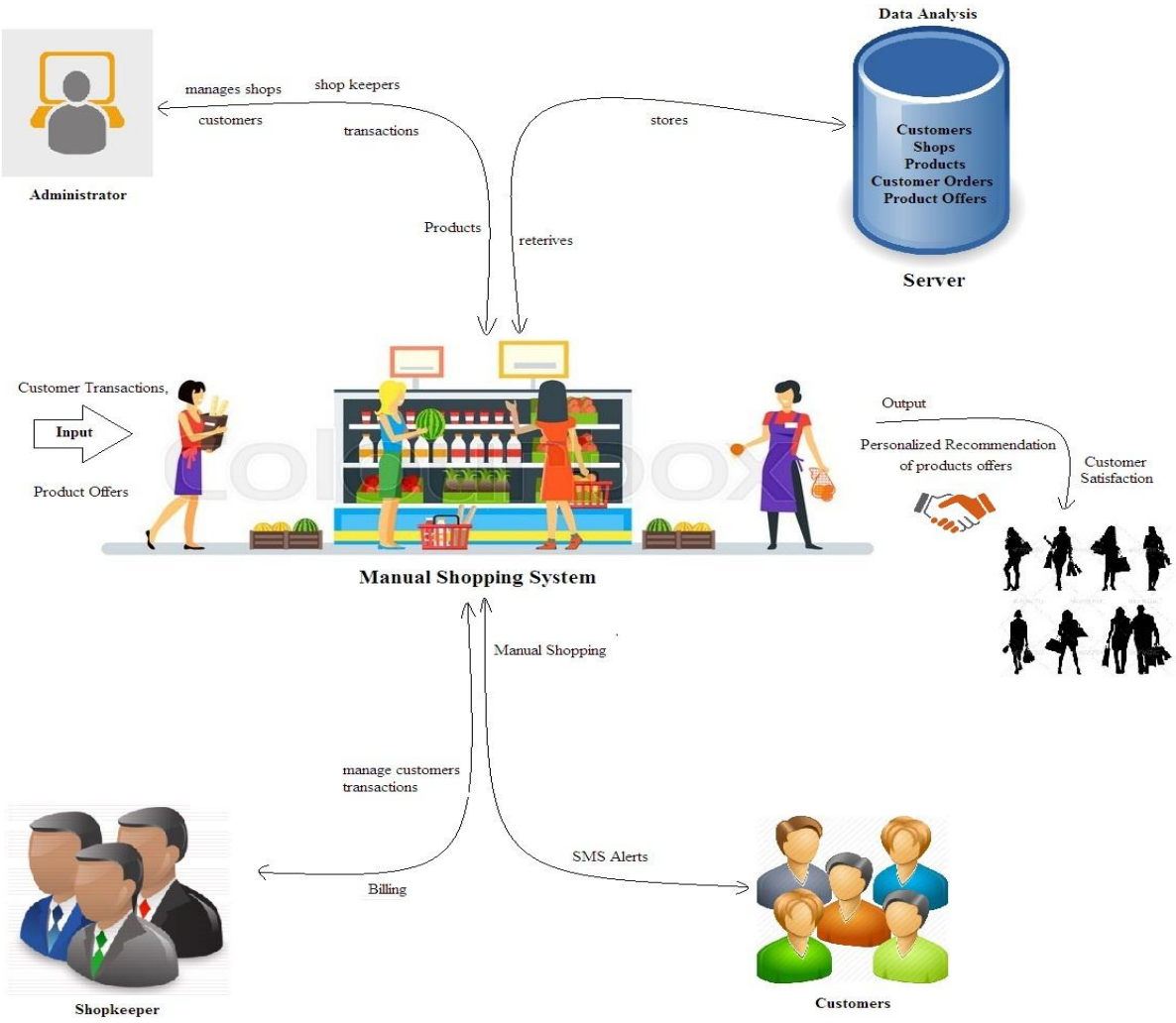
2.2 Drawbacks of the current system

- No personalized recommendations for individuals customers.
- Lack of Customer satisfaction.
- Less Reliable.

2.3 Proposed System

The process of finding and analyzing useful patterns in a large amount of data is what is called Data Mining. Due to growing generation and increased work in development of Information Technology, vast amount of data is collected in various areas. This data is analyzed and maintained in a database in each sector. Whenever a person purchases a similar kind of items in malls over a period of time, his purchase list based on the interest will be stored in database of the mall. Based on this record, a text message is sent to the Customer (Shown in Fig2) about the

offers and deals regarding his purchased records which is better than the normal offers. Hence it enhances the promotion of offline shopping making it almost equal to online shopping.



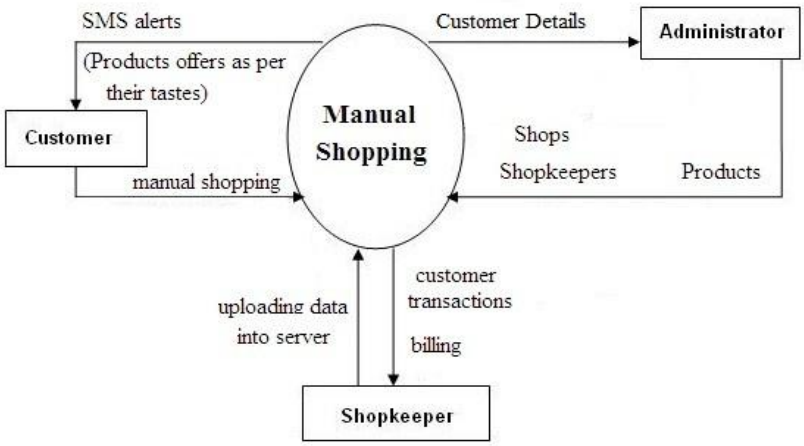
Manual Shopping

The proposed outcome of the project aims to provide better offers and deals to customers with targeting them individually, rather using a segmented approach(Shown in Fig1). It mainly concentrates on promoting offline stores than online stores. It provides the services according to the user's area of interest. Proposed system is automation for personalized recommendation system based on the customer trade behavior data. It makes use of customer trade data for identifying their tastes and provides offers. It makes use of a technique called as "Association Rules" for pattern prediction. It satisfies the users to a better extent.

Input and Output:

Input –Customers' trade data and product offers.(Shown in Fig3)

Output –Personalized recommendation of products and related offers.



Context Flow Diagram (level 0 diagram)

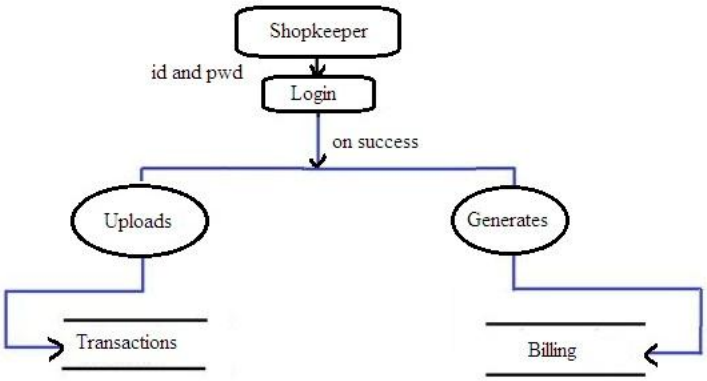
Figure 2

The Customers visits the shops and purchases the desired items and the shopkeeper raises the bill and dumps all the billing details in the centralized server. After few transactions the pattern is recognized and SMS alerts are sent to the customers. The offers sent are totally different with those of the general offers. The accuracy is determined and only those offers which are sent which the customers intend to buy.

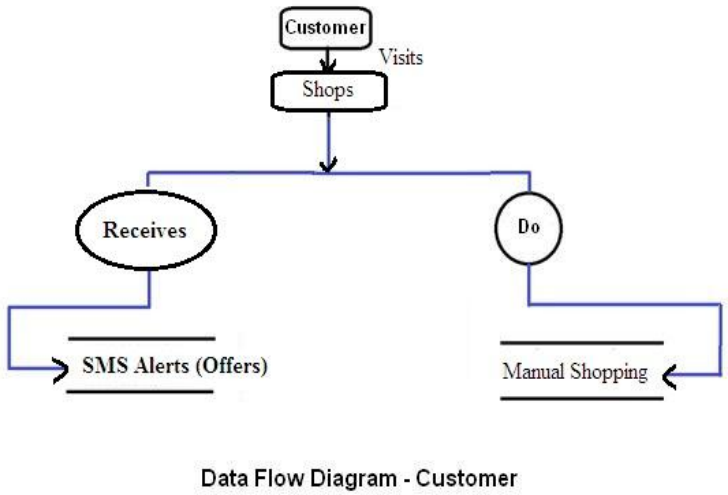
The shopkeeper logins and on successful on logging in he will

Upload all the transaction details t the server. Simultaneously he will also generate the customer billing information which will will further be put in the sever.(Shown in Fig3)

Also the customer on successful login, either he will receive the favoured offers ie SMS alerts from the admistrator or else he will manually shop his/her interested items.



Data Flow Diagram - Shopkeeper



Data Flow Diagram - Customer

Figure 3

2.3.1 The advantages of the proposed system are*:*

- The proposed outcome of the project aims to provide better offers and deals to customers with targeting them individually, rather using a segmented approach. It mainly concentrates on promoting offline stores than online stores.
- Proposed system provides the services according to the users' area of interest.
- Proposed system is automation for personalized recommendation system based on the customer trade behavior data.
- Proposed system makes use of customer trade data for identifying their tastes and provides offers.
- Proposed system makes use of technique called as "*Association Rules*" for pattern prediction.
- Proposed system satisfies the users to a better extent.

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