Dynamic Advertising: A Big Data Analytics Approach

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Abstract: *Due to development of malls there is a severe impact on local shops, leading to decline in sales of groceries, fruits and vegetables, processed foods, garments, shoes, electronic and electrical goods. All such local shops can use the Dynamic Advertising application to attract customers and cope with the loss. Moreover, on user side, if we are stuck in some situation and cannot find a particular product then with the help of this application we can find stores in which we may get the desired product.*
Keywords: *Data Mining, Data Sources, Dynamic Advertising, Databases, Data Warehouse*

I. Introduction

The Internet allows greater flexibility in working hours and location, especially with the spread of unmetered high-speed connections. The Internet can be accessed almost anywhere by numerous means, including through mobile Internet devices. Mobile phones, data cards, handheld game consoles and cellular routers allow users to connect to the Internet wirelessly. Online shopping has become a popular shopping method ever since the internet has declared a takeover. There are many individuals that are looking for other amazing alternatives shopping and online shipping is just the fix for that. There are many advantages of online shop-ping; this is the reason why online stores are a booming business today. Online shopping includes buying clothes, gadgets, shoes, appliances, or even daily groceries.

The Walmart model is a 20th century concept that's rapidly becoming obsolete in the 21st century. Internet shopping now threatens the hypermarket, which may survive in small towns with low land prices, but looks doomed to becoming a minority player. Due to development of malls there is a severe impact on local shops, leading to decline in sales of groceries, fruits and vegetables, processed foods, garments, shoes, electronic and electrical goods. Also, new stores of which the customer is not aware of, will come into limelight. Also shop vendors sell items at different prices that user is unaware.

II. Aim and Objective

- We here aim to create web portal and Mobile application for local shop keepers. Using our web portal and mobile application local shop keeper can increase their sales tremendously.
- To increase the sales of local shops.
- To give the customers recommendations based on their previous transactions.
- To enable the user to search the query as fast as possible. To link data mining engine with the web application.
- To help the local shops with advertising.

III. Problem Statement

The online buying trend is catching up slowly and constantly eating up small business as a result of which local shops find it strenuous to sell their products as a result of which their sales are drastically going down, eventually leading to deprivation in overall business.

IV. Scope

Nowadays internet is in trend. Most people use internet for shopping, Entertainment, Study and what not. Internet is ever green media. But still local shops are not taking advantage of internet for increasing their sales. Local shops are in every nook and corner of India. We are here making online platform for such local shop to sell their goods as they are not well known by many. This project will help such local shops which are willing to come online to grow their business.

V. Features

CUSTOMER PROFILING: Data mining helps determine what kind of people buy what kind of products.

IDENTIFYING CUSTOMER REQUIREMENTS: Data mining helps in identifying the best products for different customers. It uses prediction to find the factors that may attract new customers.

CROSS MARKET ANALYSIS: Data mining performs Association/correlations between product sales.

TARGET MARKETING: Data mining helps to find clusters of model customers who share the same characteristics such as interests, spending habits, in- come, etc.

DETERMINING CUSTOMER PURCHASING PATTERN: Data mining helps in determining customer purchasing pattern.

VI. Literature Survey

Due to the rapid growth of digital data made available in recent years, Web mining and data mining have attracted great attention with an imminent need for turning such data into useful information and knowledge. Many applications, such as market analysis and business management, can benefit by the use of the information and knowledge extracted from a large amount of data. Knowledge discovery can be viewed as the process of nontrivial extraction of information from large databases, information that is implicitly presented in the data, previously un-known and potentially useful for users. Data mining is therefore an essential step in the process of knowledge discovery in databases.

The process of extracting data from source systems and bringing it into the data warehouse is commonly called ETL, which stands for extraction, transformation, and loading. Oracle9i is not an ETL tool and does not provide a complete solution for ETL. However, Oracle9i does provide a rich set of capabilities that can be used by both ETL tools and customized ETL solutions. Oracle9i offers techniques for transporting data between Oracle databases, for transforming large volumes of data, and for quickly loading new data into a data warehouse. During extraction, the desired data is identified and extracted from many different sources, including database systems and applications. Very often, it is not possible to identify the specific subset of interest, therefore more data than necessary has to be extracted, so the identification of the relevant data will be done at a later point in time.

3 Vs of Big Data

<u>Volume</u> – Volume refers to amount of data. Volume of data stored in enterprise repositories have grown from megabytes and gigabytes to petabytes.

<u>Velocity</u> – Velocity refers to the speed of data processing. For time-sensitive processes such as catching fraud, big data must be used as it streams into your enterprise in order to maximize its value.

<u>Variety</u> – Different types of data and sources of data. Data variety exploded from structured and legacy data stored in enterprise repositories to unstructured, semi structured, audio, video, XML etc.

VII. Proposed System

The existing system in the market is just for online purchasing. If in case the user has to find a new product in the market, which may be available only at certain local shops then the user has to hunt for that one product in all the shops. Let's say the product is for some amount x which is large for the user to pay. It is possible that the same product may be available at a different shop at a comparatively lower price. But due to lack of advertising the user will never be able to visit this shop.

Our system aims at bringing all such local shops in limelight to help the customer to find the desired product within short span of time. Also, the products that are frequently being bought with the product customer has purchased will also be displayed. This aids the local shops in increasing their profits. This gives a sense of Virtual (or dynamic) advertising to the shop. This system will be helpful to all those shops which suffered from severe loss due to demonetization and development of malls in urban cities.

Basically, Local shops, who faced huge losses due to online shopping, development of malls, etc. will be able to make or bridge that gap. Also, people will get to know about shops, about which they were unaware.
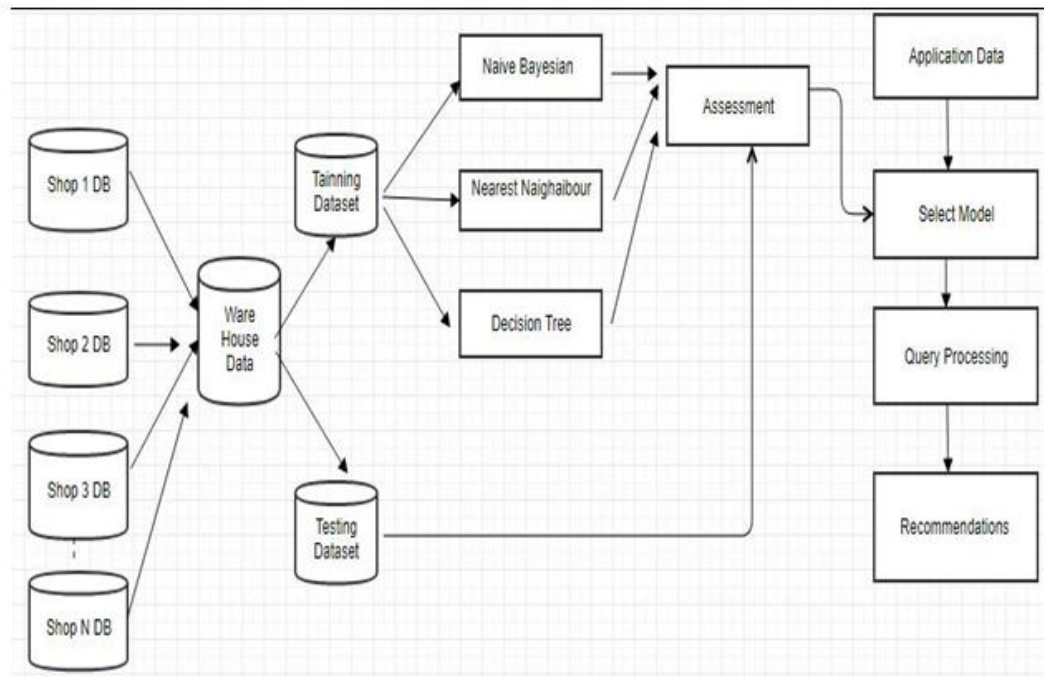
Fig 1. Proposed System

VIII.   Analysis

8.1   Process Model

Incremental model will be used for developing the web based application (web-site). Incremental model is the method of software product development where the product ID designed, implemented and tested incrementally or iteratively until the software product is completed/finished. After gathering requirements from customer, the Application/Website will be divided into small modules (Units) like Login page, Form Validation, Database Operations etc. The modularity is performed to make modules independent and it also reduces the complexity and maintains simplicity. After completing each independent Module in the web application, the working of all modules will be tested independently depending upon sample test cases to ensure that all the modules are bug free and error free. Post to testing all the modules like (Login page, Forms, Databases etc.) will be integrated to develop a single standalone Application.
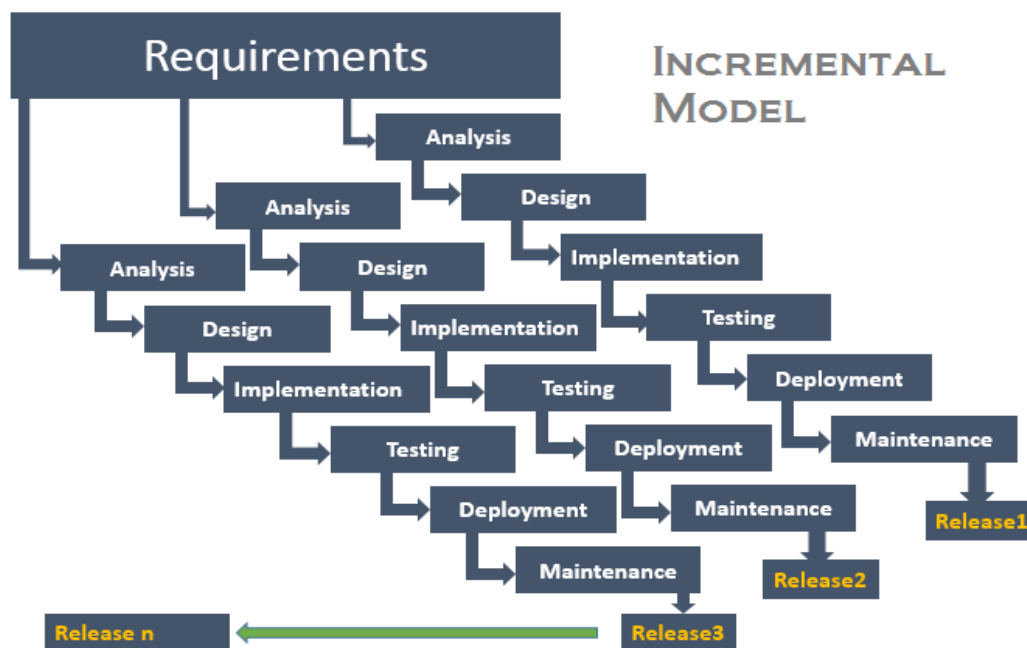

Fig 2. Incremental Process Model

8.2 Feasibility Study
8.2.1 Technical Feasibility

The proposed system is an Android application and web portal. Android application and we portal are for local shops and customer. Many people are used to devices working on Android platform. Nowadays local shop manages their data of products using database systems and give electronic bill. We make user friendly web portal for shop owner to manage his data.

8.2.2 Economic Feasibility

There is no initial cost involved for developing an Android application and web portal as the software required to develop are freeware. This system will become shopping scheduler and helper for customer. System will helpful to local shop holder to increase their sales in market. Once the system is implemented down-loading and installing this application will become a necessity and there will be no cost involved to use the system.

8.2.3 Operational Feasibility

Due to malls and online shopping local shops faces loss in business. And some time customer does face many problems to search products on urgent basis. There are different prices of products in different shops. System will schedule the shop-ping path depends on Geo-locations. System will suggest best shop to by certain product.

IX. Algorithm/Methodology

Our main aim is to develop a data mining engine which performs various type of mining operations such as associative mining, predictive mining, clustering algorithm, etc. and then integrate this mining engine with the frontend of our system. We first start with showing the users a list of frequently purchased items. This gives the users a hint about current trend of shopping going around in the market. Then the system takes whatever the user enters in the search bar as a single query. This query is processed by the beans. Various mining operations are performed on the query to give the user best possible results. Having studied the research papers, we finally decide to use the Apriori algorithm for data mining. The user can use the system to generate a comparison for a certain item in various shops. This will aid the customer in making a correct decision of selecting a shop for purchasing certain goods.

We will first start with collecting data from various local shops. We will try to analyze and understand the different attributes associated with data. Then we will finalize a database design that best suits our application. We will invest some time in proper designing of the database so that it properly handles any missing values or redundant data. Then we will switch to the business component of our architecture. In simple words, more emphasis will be given on writing the mining algorithm in form of beans so it can be executed on the user entered query. Once the mining has been performed successfully we will render the results of mining on our home page.

X. Conclusion

The project Dynamic Advertising will provide facilities to local shop for increasing their seals. Most of facilities are same as Amazon or well-known online sellers. Advantage of our project over these online sellers is, we provide location based shopping option.

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