



Management of an E-Commerce Enterprise: A Data Mining Approach

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Abstract: In this system we aim providing the user with products for which the probability of purchase is highest also providing information about inventory level. Tracking the trends of purchases over a period of time dynamic discounts or freebies may also be offered to the customer based on past and current purchases as well as current inventory levels.

In an event of unavailability of desired product there would be a mechanism through which the customer can inform the store-keeper about the same providing the details of the products to which the store-keeper would respond upon availability of product.

If a certain product has lost market buzz and not actively being sold as it is expected to be, then an auction process may be carried out for the product in which the highest bidder gets the product, general auction principles would be adhered and complied. The objective being to save inventory space and maintenance cost.

Keywords: E-Commerce, Data Mining, auction, profitability, inventory, trends of purchases, maintenance cost

I. INTRODUCTION

The market place today is evolving from brick and mortar physical shops which were dominant to click and mortar online portals. The recent decade saw an increased number of such setups being established which captured the market. Thus today with presence of many such options of online portals to the user the effective management of such an enterprise is of prime importance. Nowadays with the evolving times and extreme competition prevailing in various domains of consumer related markets understanding various segments of customers and their behavioural patterns forms a great concern for an organization of any size where customers are driven by ever changing market trends, provisions of customized service is the key to survival in matters of retaining customer loyalty. At all times trade-off between transaction cost and customer relation needs to be maintained optimally.

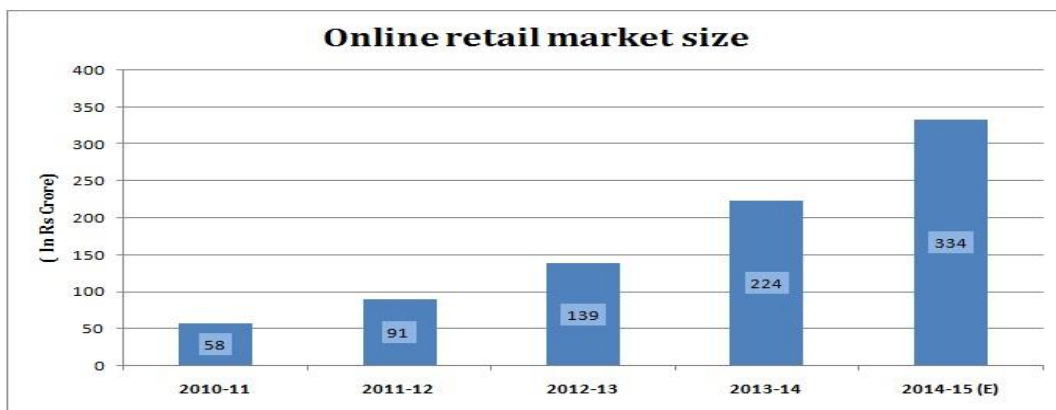


Fig1: Growing online retail market in India

II. THE NEED FOR CUSTOMER BEHAVIOR PREDICTION AND DATA MINING

The emergence of the business-to-customer (B2C) markets has resulted in various studies on developing and improving customer retention and profit enhancement. This is mainly due to the retail business becoming increasingly competitive with costs being driven down by new and existing competitors. In general, consumer markets have several characteristics such as repeat buying over the relevant time interval, a large number of customers, and a wealth of information detailing past customer purchases. In those markets, the goal of CRM is to identify a customer, understand and predict the customer-buying pattern, identify an appropriate offer, and deliver it in a personalized format directly to the customer.

That is, the abundance of customer information enables marketers to take advantage of individual-level purchase models for direct marketing and targeting decisions. But, such an enormous amount of data can be a huge clutter, and it can become cumbersome to draw meaningful conclusions from such raw data. This is where the utility of customer behaviour prediction using Data mining techniques comes in.

III. RELEVANCE OF DATA MINING TOWARDS CRM

Data mining techniques are the processes designed to identify and interpret data for the purpose of understanding and deducing actionable trends and designing strategies based on those trends. Data mining techniques extract the raw data, and then transform them to get the transformed data, and then get meaningful patterns among the transformed data. As businesses evaluate their investments on marketing activities, they tend to focus on their data mining techniques and capability.

How to learn more about customers and their inclination towards particular products, use that information to make appropriate choices to customers, and understand which marketing strategies can succeed in long term customer satisfaction and retention. Managers can understand their customer by evaluating customer behaviour, customer segregation, customer profiles, loyalty (how long have they been associated with the company) and profitability (which products can be targeted to the particular customer so as to extract maximum profits). Data Mining helps managers to identify valuable patterns contained in raw data and their relations so as to help the major decisions.

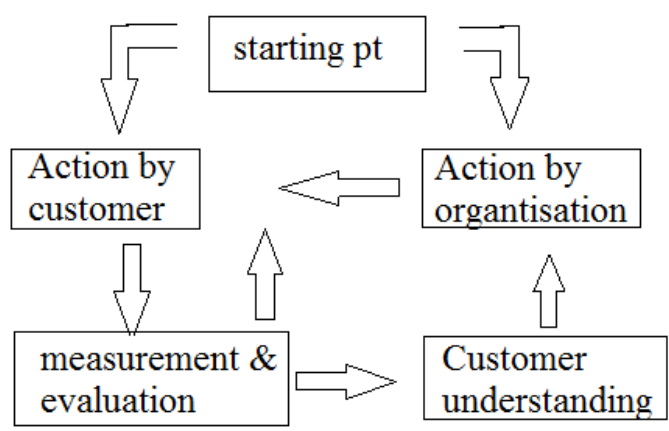


Fig.2: Basic CRM Cycle.

IV. ENTERPRISE OBJECTIVES

Develop an effective and interactive E-Commerce module which is able to find the best deals of most desired product for the customer thus maintain customer loyalty as well as being lucrative for attracting new customer and striving through high competition prevalent in market.

Integrating the idea of data mining and the concept of E-Commerce develop a system that analyses behaviour of customers at large as well as individual customers to obtain maximum yield in terms of sales, revenue and profit.

V. PROPOSED SYSTEM AND FEATURES

1. **Market Trends:** In our project we aim at studying market trends based on data collected from consumers at large which will be used for analysis.
2. **Behaviour Analysis:** The peculiarity in the behaviour will be obtained.

3. **Decision Analysis:** This data sought will serve as a decisive tool for various strategic decisions.
4. **Ensuring Customer Interest in the System:** Based on various purchases performed by a customer various discounts will be offered to the customer outright.
5. **Predictions:** By using predictions the time taken by the customer to search the product will be minimized.
6. **Ensuring Customer Retention to The System:** Based on past log record discounts may be offered to the customer hence the customer will find the system lucrative.
7. **Auctions:** Suppose a product has lost market the market buzz and is occupying inventory space for over a given period of time, the sales of the product are not as expected then in such a case there can be an auction conducted which can be given some time for a stipulated time or a stipulated day in the month where the customer can bid for the product where the minimum bid price is specified by the store keeper. At the end of the bidding time the customer with the highest bid amount gets the product.
8. **Better Inventory and Space Management:** Considering the inventory cost such as security cost, shortage of space, cost of goods insurance as well as management cost the inventory is not filled with redundant products which are not currently saleable in the market.
9. **Market Analysis:** In all market places there exists some part of the year where the demand for a certain product is very high a thorough market analysis is done for such period where high sales can be expected as well as the products that can be easily sold thereby increasing revenue.
10. **Customer Needs:** There are times when a customer does not find the desired product this if happened repetitively will lead to customer dissatisfaction and in the long run may lose potential customers. To deal with this issue there should exist a mechanism in which if the product which the customer desires is unavailable, the customer can fill up a form which will contain all the vital details of the product which will be communicated to the store manager who will try to make the product available and upon availability of the product will inform the customer.

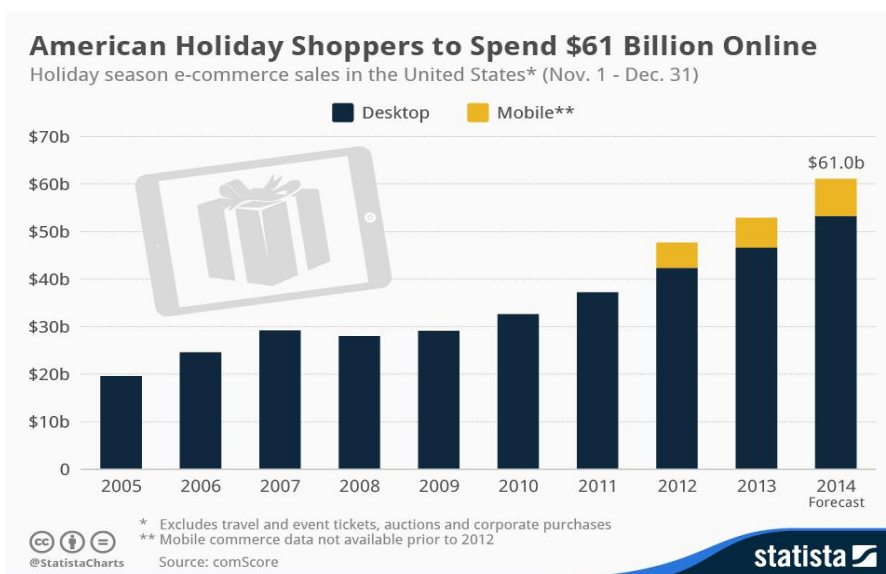


Fig3. Graph of American Shopping trends in Holiday season.

VI. IMPLEMENTATION OF PROPOSED SYSTEM

Initially the client logs into the system. The system based on predictions presents the customer with a list of products which is fetched from database, as well as the inventory level is shown to the customer thus achieving transparency in the system. The entire system is governed by administrator who administers the entire system and has complete control over the same.

The customer would search for the product desired, if the customer finds the product then the customer would select the product, post completing the selection, a new page would appear which would be for order confirmation, where the customer gets another opportunity to check whether the selection is correct, which then follows to the payment module and the transaction ends.

If the product desired by the customer isn't available at that given time then there is a mechanism through which the customer can intimate the store manager or the inventory management system that is by filling a request form which consists of all details of the product desired this form is then sent to the store manager who tries to make the product available if possible and notifies the customer when the product is available.

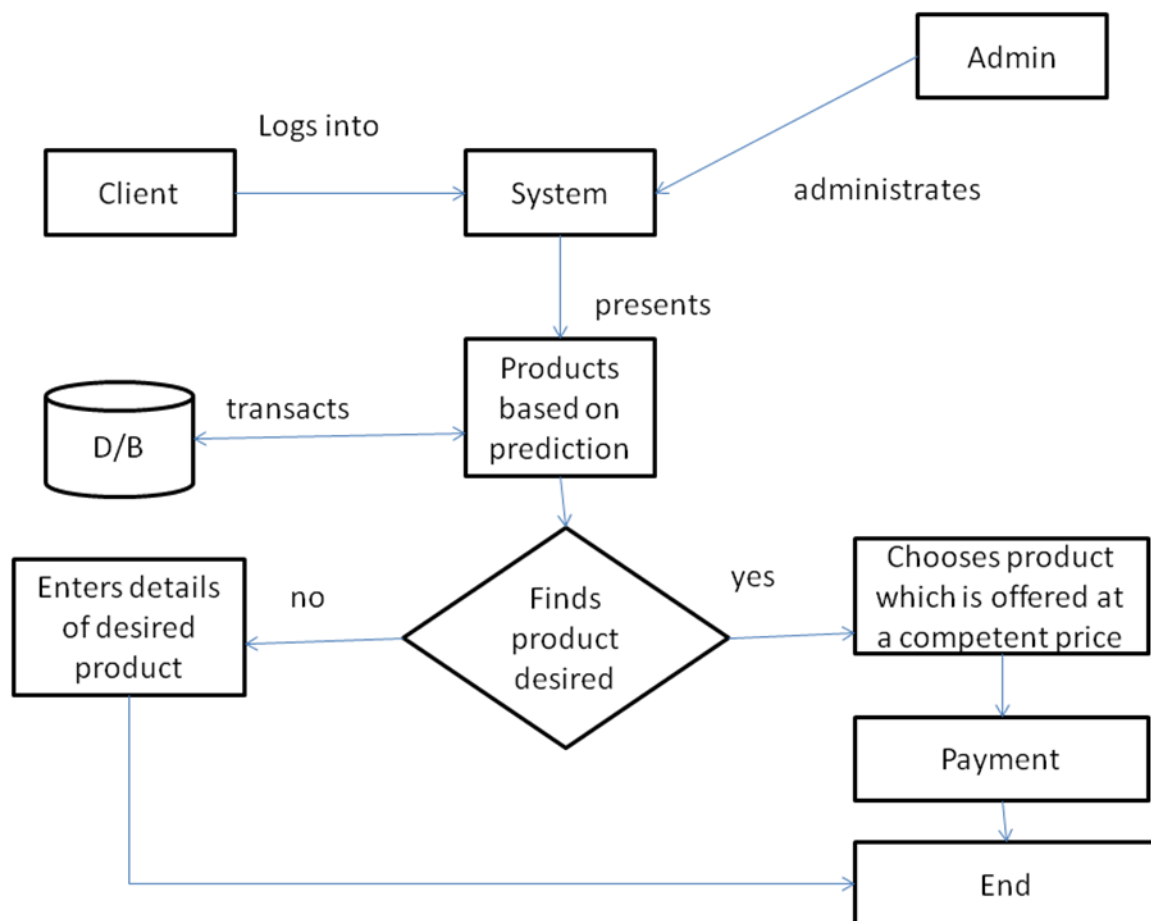


Fig.4: Implementation Diagram of Proposed System.

VII. Conclusion

In this research paper we have focused on of efficient management of an E-Commerce enterprise in competitive market conditions by making the strategy devoted towards sell side e-business, keeping customer at main focus of all decisions, by getting customer related information to give the customer a better shopping experience thereby growing the customer base and also profitability in all market conditions.

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