Real Time Product Price Monitoring & Analysis Application for E-Commerce Websites

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Abstract - *E-Commerce product sale prices are constantly changing with the time. They also vary according to the location and environment. There are various vendors and dealers with varying prices of products. This product studies the dynamic pricing of e-commerce websites to providing the optimal analysis for user and recommendation for buy price for product. It describes the methods of obtaining information on price trends, competitive offers, product availability and their further processing for the purposes of gaining strategic competitive advantage in terms of sale. Finally, it presents a solution in which the described procedures are implemented.*

Key Words: **E-commerce, Price Trends, Dynamic Pricing, Price Monitoring, Online Sales.**

1. INTRODUCTION

The rapid growth information technology in E-commerce domain has given E-commerce websites enhanced capability for revenue management. E-Commerce can now monitor demand for all their products in real time and adjust their prices dynamically in response to the changes in demand intensity. Dynamic pricing is a business strategy of websites that adjusts the product pricing in order to maximize their expected revenues according to the customer shopping pattern. This paper studies an optimal dynamic pricing problem for seasonal and style products in e-retailing setting. In last 4-5 years, the problem of dynamic pricing has drawn much attention. Most existing research on dynamic pricing assumes that customer arriving rate and reserve price distribution were will well-known by retailers. Actually, the reserve price distribution is relatively steady and can be well estimated before sale horizon by analyzing historical data, but the customers arriving rate usually changes during the whole sales horizon.

2. LITERATURE SURVEY

1. Yang Cheng: "Real Time Demand Learning-Based Q-learning Approach for Dynamic Pricing in E-retailing Setting": This paper investigates how to integrate this real time learning technology with Q-learning algorithm for the optimization of dynamic pricing in e-retailing setting. Especially, this paper studies the optimal dynamic pricing problem for seasonal and style products in e-retailing setting, and validate our approach in simulated test.

2. K.Y. Lin: "Dynamic pricing with real-time demand learning": In this paper author presents a dynamic pricing model where customers arrive in accordance with a conditional Poisson process. In his dynamic pricing model, customers' arriving rate is not known to the seller in advance. As the sale moves forward, the seller uses real-time sales data from the realized demand to fine-tune the arrival rate estimation, and then uses the fine-tuned arrival rate estimation to better understand the demand curve in the future.

3. Radoslav Fasuga, Pavel Stoklasa and Martin Němec: "The Method of Automated Monitoring of Product Prices and Market Position Determination in Relation to Competition Quotes": This paper deals with the issue of automated determination of product sales price in the on-line environment. It also describes the method of calculation and the importance of global market position based on the prices and services offered. The paper describes the sources where you can obtain information on the prices and marketability of the products. It describes the procedure to find the relevant products on the competitor's websites, in product aggregators and auction systems.

4. A. Federgruen, A. Heching. "Combined pricing and inventory control under uncertainty". In this paper the authors consider the optimal inventory and pricing policy of a seller who faces an uncertain demand where prices are changed periodically over time.

5. W. Zhao, Y. S. Zheng: "Optimal Dynamic Pricing for Perishable Assets with Nonhomogeneous Demand": In this paper the authors investigate the structural properties of dynamic pricing model for selling a given stock of perishable products over a finite time horizon, where the customer's reservation price distribution changes over time. They consider a retailer that plans to sell a given stock of items during a finite sales season. Their model brings together various types of uncertainties about the demand, some of which are resolvable through sales observations.

6. Felfernig, A., Jeran, M., Ninaus, G., Reinfrank F. and Reiterer, S., "Toward the next generation of recommender systems": In this paper the authors point out that manual monitoring of the development of product prices is possible today only for a very small set of products and competitors. For commonly sold goods, we may want to follow hundreds of products with dozens of possible competitors. It is therefore evident that this task cannot be resolved without automation of these processes.

3. PROPOSED SYSTEM

The current systems aid the retailers to sell at optimal cost and gain better profits. We propose a system built for buyers to get product at the most optimal cost for the desired product. We propose a multi-platform service which enables regular buyers to enhance their shopping abilities by using a monitoring system for their products. The users have to start an account and consecutively they will be allocated a fixed monitoring resource through which they can start monitoring. The users have to add their desired products to the monitoring service and our proposed system will track and analyze the price pattern and notify the user when the price is right to buy the product. Proposed system architecture is shown below.
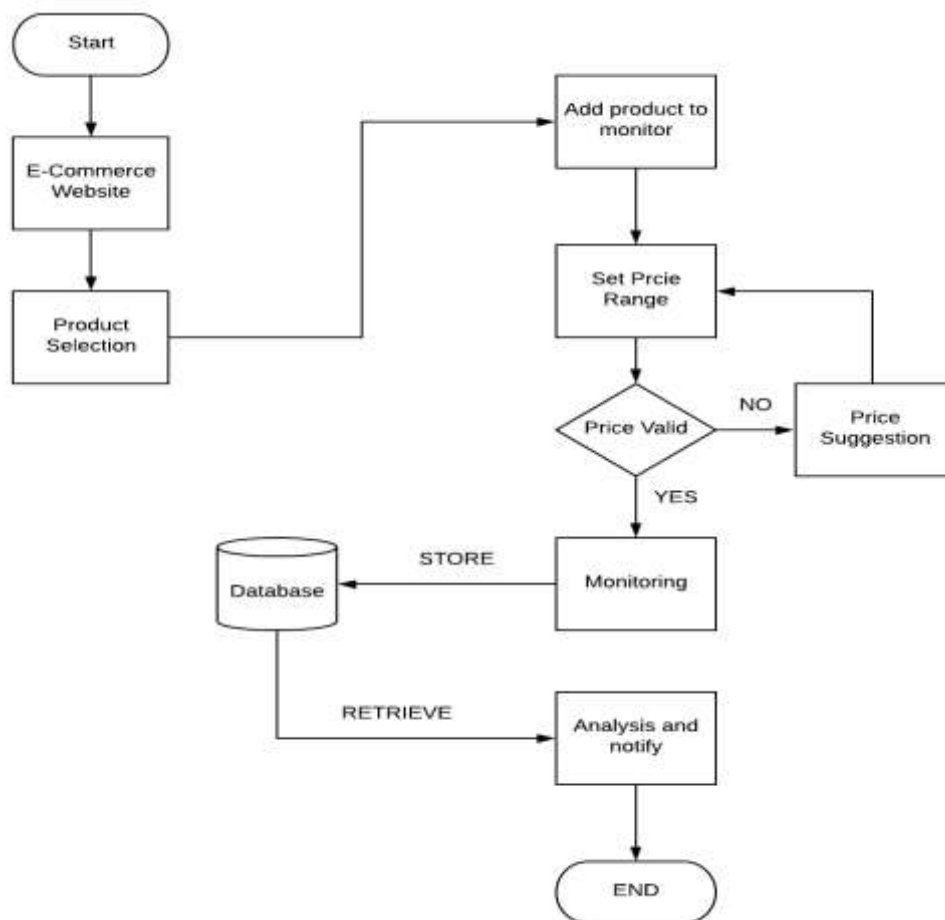

Figure: System Architecture

According to the architecture of proposed system the user will copy the product link from the e-commerce website. They have to add the product link to application. The application will then ask the user to set price for the product. After a valid price given by the user, the monitoring will start and the product will be added to monitor list. The price variations will be stored in database. The analysis charts and diagrams will be generated by retrieving this information. The system will then notify the user when the price is right for purchase of product. The analytical diagrams will aid the user to make a proper and informed decision regarding the purchase of product.

4. FUTURE WORK

The system can encompass various other features within its ecosystem as the application/service grows in size. There can be an automatic buying system will purchase the product for the user at the lowest possible price using data analytical models and predictions. There can be a business model which can increase the service monetization if there are products to be monitored at a large scale.

5. CONCLUSION

We have proposed a system for real-time analysis and monitoring of e-commerce products. The proposed system will aid the users, regular e-commerce buyers to make an informed purchase. It will also work as a notification system for busy individuals who want the product in the right price range. It will show rich and simple analytical diagrams for simplifying the decisions of the registered users.

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