

Pricing Intelligence and Recommendation System

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Abstract

Guaranteeing the profitability is a significant issue for the creating nations like India, where more than 33% of the individuals is live in neediness. Pricing is the important concept that both the retailers and producers need to keep track in order to be aware of the gaps between the current and the future market. Hence Intelligent pricing is the new technology concept existing in order to help the customers review the products and keep updated with the market trends and their pricing. The emergence of e-commerce websites has enabled users to publish or share purchase experiences by posting product reviews, which usually contain useful opinions, comments and feedback towards a product.

In this application we have a tendency to illustrate item-based algorithmic rule and client Review rating algorithmic rule techniques and system will be predict supported the highest overall sellers on a web site, on the demographics of the patron, or on associate degree analysis of the past shopping for behavior of the patron as a prediction for future shopping for behavior. to deal with these problems, we've got explored many cooperative filtering techniques like the item-based approach, that establish relationship between things and indirectly cypher prediction for users supported these relationships and additionally compare things from completely different on-line sites with their rating. The user-based approach was additionally studied; it identifies relationships between users of comparable tastes and computes prediction supported these relationships. The pricing intelligence is showing best costs within the market level.

Keywords E-Commerce, Pricing Intelligence, Item- based algorithm, Review rating algorithm.

1. Introduction

Pricing intelligence refers to the attention of market-level and its impact on business, usually victimisation fashionable data processing techniques. it's differentiated from alternative rating models by the extent and accuracy of the competitive rating analysis. Pricing intelligence consists of following, observance and analysing analysis info to grasp the market and build educated analysis changes at speed and scale. As a results of product analysis changes typically, retailers got to be compelled to constantly monitor their relative price position and incorporate changes at intervals a dynamic strategy. Products, Gaps, Variables, and Competitive Insights on one platform unit you positive that your competitive insights unit up-to-date, accurate, and incorporate all the obligatory factors regarding product, prices and more? Even with high-quality code, many aspects of competitor's activity that will significantly impact your analysis strategy typically go unmarked.

The emergence of e-commerce websites has enabled users to publish or share purchase experiences by posting product reviews, that sometimes contain helpful opinions, comments and feedback towards a product. As such, a majority of shoppers can scan on- line reviews before creating Associate in Nursing conversant purchase call. it's been according that concerning seventy one of world web shoppers scan on-line reviews before buying a product. Product reviews, particularly the first reviews have a high impact on sequent product sales. we tend to decision the users World Health Organization announce the first reviews as early reviewers. though early reviewers contribute solely a little proportion of reviews, their opinions will confirm the success or failure of recent merchandise and services. it's vital for corporations to spot early reviewers since their feedbacks will facilitate corporations to regulate promoting methods and improve product styles, which may eventually result in the success of their new merchandise. For this reason, early reviewers become the stress to observe and attract at the first promotion stage for a corporation. The polar role of early reviews has attracted intensive attention from promoting practitioners to induce shopper purchase intentions. as an example, Amazon, one in every of the biggest e-commerce company within the world, has advocated the first Reviewer, that helps to accumulate early reviews on merchandise that have few or no reviews. With this program, Amazon shoppers will learn a lot of concerning merchandise and create smarter shopping for choices.

That's why we created Competera – a scalable and comprehensive pricing platform for retailers. It allows to compare everything from shipping information to product photos as well as deliver this data fast enough to effectively utilize it. Products, Gaps, Variables, and Competitive Insights

on one platform Are you sure that your competitive insights are up-to-date, accurate, and incorporate all the necessary factors about products, prices and more? Even with high-quality software, many aspects of competitor's activity that could significantly impact your pricing strategy often go overlooked. That's why we created Competera – a scalable and comprehensive pricing platform for retailers. It allows to compare everything from shipping information to product photos as well as deliver this data fast enough to effectively utilize it. Now your company can see every vital competitive insight in a single interface designed to help you contextualize and utilize fresh, high-quality, complex data as simple as possible. E-commerce Pricing Intelligence solution is based on the price, and also the product insight the data of the consist of the complex of the system. Pricing intelligence for retailers has become a booming business in its own right. A soaring U.S. economy is expected to push market revenue beyond \$530 billion in 2020. Even so, keeping online sales rolling will require more than a good economic environment, it will require pricing intelligence. Let's start about the of online price-setting. Pricing is extremely risky business. value merchandise too high, and customers unit of measurement happy to require their cash elsewhere. value too low, and also the product loses its value and struggles with whole degradation .it is powerful to hunt out the sweet spot between entity all- time low line and attention-grabbing customers to induce your product.

2. Background

Why is Price Intelligence Important?

Price intelligence is vital as a result of retail valuation may be a fast, competitive, and ever-evolving world wherever the correct or wrong value features a direct impact on sales and gain. Today's customers are a lot of sensitive to cost than ever before. the power to check costs via smartphones has given rise to showrooming and webrooming, as shoppers are able to read product future or online and check to visualize if a much better value are often had from a distinct web site of the system. In fact, there are several mobile applications designed specifically for value comparisons and most retailers provide price-match policies to remain competitive, the speed and scale of eCommerce mean costs on-line fluctuate abundant faster than doable at brick-and-mortar retailers. Amazon has been reported to regulate its products' costs each couple of minutes, and plenty of larger brands and retailers do constant. value changes usually result in a body of water impact, wherever the primary complete or merchandiser to vary a value sparks follow-up changes from competitors to match.

Reprice: Is the most important for the pricing intelligence, in the market strategy of the more product prices in the level of the product strategy of the monthly changes of the product in the reprices of the system. in the old model of the item there will no price changes. and new model of the prices there will be price level will automatically will high it will happen in the market level. When vendors will change the prices, it had more prices cost will be high and low in the market level.

Use Automation: the traditional model of expecting price changes manually is inefficient, time intense and typically inaccurate. to not mention, the massive amount of existing info makes it robust to scale. price looking at intervals the age suggests that victimization algorithmic rule to understand that product area unit identical and similar, even once product titles or photos don't match up. each businessperson many have a special internet site layout, structure and naming convention, but with the help of algorithms, they'll get further correct valuation information across dealing channels faster. By automating competitive valuation analysis, retailers can receive correct valuation info in timely manner. This frees up valuable time and resources. Eliminates potential human error and provides relevant and proper information.

Existing System

As, there's a growing awareness of the importance of mixture diversity in prophetic systems. Recent study focuses on developing algorithmic techniques for rising mixture diversity of prophetic which might be instinctively measured by the number of distinct things foretold across all users. Higher diversity (both individual and aggregate) turn out the expense of accuracy. As famous well, there's a trade-off between accuracy and variety as a result of high accuracy might usually be obtained by safely predicting to users the foremost in style things, which might clearly cause the abatement in diversity, The recent study projected ranking techniques square measure very economical, as a result of their supported climbable sorting-based heuristics that build choices based mostly solely on the "local" information (i.e., solely on the candidate things of every individual user) with having to stay track of the "global" info (item based mostly user based), like that things are counselled across all users and the way over and over while not having user satisfaction and user wants. The techniques are premeditating, since the user has the management to settle on the suitable level of accuracy that the range are maximized. Also, ranking techniques offer a versatile resolution in rising prophetic diversity because of their applied once the unknown item ratings are calculable and, thus, can do diversity gains in conjunction with variety of various rating prognosis techniques.

When it involves prognosticative systems, everybody's trying to extend accuracy: The Amazon Prize was awarded last Gregorian calendar month for associate degree formula that improved the accuracy of the service's prediction formula by ten %. However, pc scientists are finding a brand-new metric to boost upon: prognosticative diversity. Accuracy has long been the foremost prized mensuration in prognosticative content; but pc scientists note that this kind of system will slender the sector of interest for every user a lot of it's used. Improved accuracy may result during a sturdy filtering supported a user's interests, till the system will solely predict a little set of all the content it's to supply.

With such a rapid increase in number of people who are preferring online shopping and so many companies coming out to sell their products, The application like this is need of the hour, Where a customer don't need to check each and every website to get maximum benefits which can be in terms of quality or price. With this, the only thing the customer needs to do is decide a product to buy and use this application.

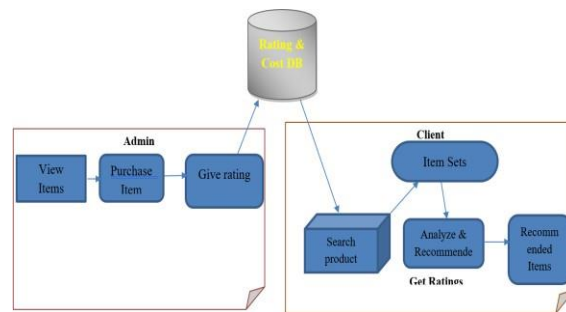


Figure 5.1 Architecture Diagram

Admin: Objectives

The central focus of this research work is to provide Automatic and real-time monitoring of market prices for your products. The major objectives of this research work include:

1. To provide Powerful analytic tool to help forecast optimum pricing in advance.
2. Dynamic pricing solutions that help you set the optimum price, not necessarily the lowest price, for each other customer.

Unlike most scraping software, pricing intelligence is more than data collection. Thanks to AI, the technology can intelligently decide how to use that the data to set the optimum prices for your site. While not all package includes AI or big data analytics, those that do not are more limited in what they can do for you. That does not make them the wrong choice. It does makes them more suitable for smaller companies with simpler needs.

3. Problem Statement

Designing and developing a application model to analyse and predict items to purchase from online store by taking customer reviews. Cost prices problem they will reduces the cost and all showing the best prices. In most of online shopping websites, it just shows rating given by the user but not recommend which item is best. To overcome this, we use collaborative filtering approach in recommendation system that recommends the best items for user.

4. Proposed Methodology

The below diagram, figure 5.1 shows the architectural view of the proposed work.

Module 1: Get dataset file and analyses.

- Select the dataset from database and analyses the dataset and store the analysed dataset in database.

Module 2: Collaborative filtering technique

- Find the unrated items in the analysed dataset.
- Get ratings on unrated items.

Client:

Module 3: Get recommended item.

- Search for the item, get the requested item with its specifications, cost and ratings.
- Apply for recommendation and get the recommended website to buy the product from.

The below figure 5.2a and 5.2b respectively shows the use case diagrams of our proposed work.

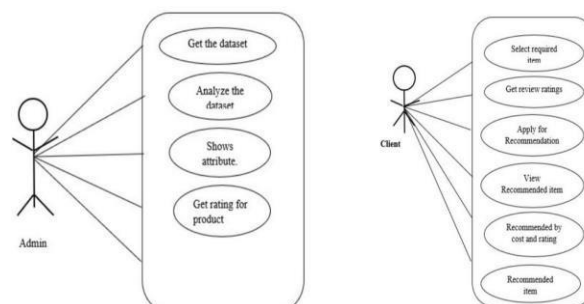


Figure 5.2a Admin Use case, 5.2b Client Use case.

In this application we have a tendency to illustrate item-based algorithmic rule and client Review rating algorithmic rule techniques and system will be predict supported the highest overall sellers on a web site, on the demographics of the buyer,

or on associate analysis of the past shopping for behavior of the buyer as a prediction for future shopping for behavior. to deal with these problems, we've got explored many cooperative filtering techniques like the item-based approach, that determine relationship between things and indirectly calculate prediction for users supported these relationships and conjointly compare things from completely different on-line sites with their rating. The user-based approach was conjointly studied; it identifies relationships between users of comparable tastes and computes prediction supported these relationships. The pricing intelligence is showing best prices in the market level.

5. Results and Evaluation

The dataset is collected from the different websites over internet browser and the dataset looks like the format shown in figure 6.1

Product Name	Brand	MRP	Selling price	Discount	Created at	Updated at
1. 1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
2. 1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
3. 1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
4. 1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
5. 1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42

Figure 6.1 Dataset

The figure 6.2 shows the Application Home page which shows the details of User logged in and the details of the products and the type of them and so on.

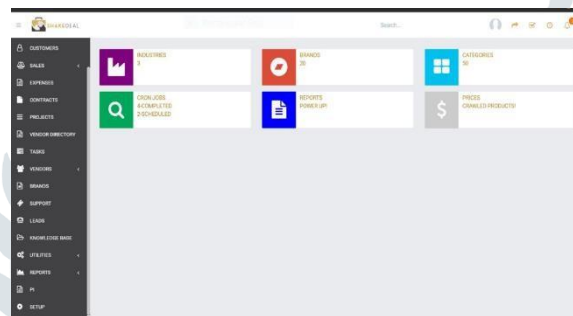


Figure 6.2 Application Home page.

Figure 6.3 shows the database used for storing the details of the products and others used for the application.

Product ID	Product Name	Brand	MRP	Selling Price	Discount	Created At	Updated At
1	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
2	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
3	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
4	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
5	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42

Figure 6.3 Database view

Product ID	Product Name	Brand	MRP	Selling Price	Discount	Created At	Updated At
1	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
2	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
3	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
4	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42
5	1kg 100% Pure White Rice...	Standard	₹1,200	₹1,100	8%	2019-10-10 18:45:42	2019-10-10 18:45:42

Figure 6.4 User Application page

Figure 6.4 shows the application page of the user where he gets the recommendation of the products based the user ratings and the recommendations accordingly.

6. Conclusion and Future Scope

Recommender systems are a powerful new technology for extracting extra worth for a business from its user databases. These systems facilitate users notice things they need to shop for from business. Recommender system advantages user by facultative them to search out things they like. Recommender system area unit being stressed by the massive volume of user knowledge in existing company knowledgebases and can be stressed even a lot of by the increasing volume of user data obtainable on the net. New technologies are needed which will dramatically improve the quantifiability of recommender systems. It's clear that rating strategies play ascertain Sweet Spot product of the system. It is usually strong to go looking out the sweet spot between object the bottom line and enticing shoppers to urge your product. Rating intelligence unit the choice business produces a once setting for product, brand, services. For each company that make simple rating selections typically decide to increase sales by making very little, competitive changes like purchase discounts. For deciding of the merchandise in market level.

With such a rapid increase in number of people who are preferring online shopping and so many companies coming out to sell their products, The application like this is need of the hour, Where a customer don't need to check each and every website to get maximum benefits which can be in terms of quality or price. With this, the only thing the customer needs to do is decide a product to buy and use this application. This application can be transformed into a real time application with most recent, updated attribute. More products and more websites to compare from can be added. This can be transformed into an android application, so that user can have more rich experience.

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