Price Comparison for Products in Various E-Commerce Website

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Abstract: Price comparison websites have become today one of the most important sources for the purchase of all kinds of products. Many strategies were developed by analyzing the user’s behavior in order to attract more business and engage people. Since there are a lot of e-commerce sites available, it becomes difficult for users to choose the best price for the desired product among those sites. Comparing e-commerce products using web explorer allows users to analyze prices and obtain the desired product at the minimum price. Users can also select several products within the same category to compare their characteristics. To get information about products from e-commerce web crawlers and web scraping techniques are used to get detailed information. The proposed system is based on users’ expectations and security. The user can clearly know the exact price of the product and is looking for discount offers in different e-commerce sites. The proposed system can be a simple and effective way to know the exact price and the offers provided by the different e-commerce websites. This way aims to provide a solution for online customers to purchase products at cheap prices and save their valuable time, effort and money.

Keywords: web mining, web crawling, web scraping, price comparison, e-commerce

INTRODUCTION
E-commerce is a burgeoning, promising industry. E-marketer estimates that global retail sales will rise to more than 400 million in 2020. E-commerce is a source of convenience to us all. Its users can research, browse, compare, and purchase various items without time or geography constraints. In today’s online business age, e-commerce has become a huge marketplace for people to buy goods online. The increasing use of intelligent devices and other mediums has paved the way for users to purchase products virtually anywhere. This has increased the participation of online shoppers in the development of e-commerce businesses. This large number of e-commerce websites places users in a difficult position to search and choose to purchase a single product from several e-commerce websites. The proposed solution helps online users get prices for their products from multiple e-commerce sites across a single web interface. This will save users time, money, and effort in finding the same product prices on different e-commerce sites. The proposed system utilizes a process of web mining as the part of web mining they are two types of techniques one is web scraper & web crawler, web scraper technique to extract data from e-commerce web pages and a web crawler to link products.

LITERATURE SURVEY
Price comparison websites (PCWs) have gained significant popularity in India in recent years. With the growth of e-commerce in the country, consumers are looking for ways to find the best deals on products sold by different online retailers. This literature survey aims to explore the research conducted in the field of price comparison websites in India, with a specific focus on the factors that affect consumers’ decision-making process when using these websites.

a) Literature review for price comparison websites
According to the study of Nigam and Gupta in 2020 explored the factors influencing Indian consumers' behavior when using price comparison websites. The study found that consumers use PCWs to save time, compare prices, and find the best deals. Additionally, the study found that the trustworthiness and reliability of the website were important factors for consumers when using PCWs. The study also highlighted that consumers tend to use PCWs for high-involvement purchases, such as electronics and Appliances. The literature suggests that price comparison websites are becoming increasingly popular among Indian consumers who want to find the best deals and save money on their purchases. Factors such as trustworthiness, reliability, and convenience are critical in influencing consumers' decision-making process when using these websites. Additionally, PCWs have a significant impact on the Indian e-commerce industry by promoting competition among online retailers and contributing to the industry’s growth. These findings can be valuable for businesses operating in the Indian e-commerce industry, as they can use this information to develop more effective marketing strategies and improve their online shopping experience for consumers.

b) Drawbacks in price comparison websites
Integrating API refers to how two or more applications can be connected via their APIs to perform some operations as a joint function next is lack of users data safety which means when a user can log in their information on the web page and save it whether the user does not know where the information is saved and it's in secure or not in manner and also the history of search & the products information are not maintained properly and other drawbacks are adding data manually it includes adding the products data by typing the various data in rows or columns in the excel sheets another one is discounts for the products which means if any products have a time of discount in the e-commerce site they will not get the proper information about it.
E-commerce has changed the way businesses are conducted and has transformed the structures of the global marketplace. Therefore, new relationships have been established between consumers and suppliers of all products and services. In this regard, there is sufficient information on the Web site on the products and on the search and purchase communication channels. In e-commerce, customers are met with many multi-category products and services. As such, much time is spent researching and selecting information before they can determine what they really need. These tools also help businesses offer customized offers to their customers and define a system that recommends the right product or service after learning about customer preferences and wants.

I. OBJECTIVES OF THE PROPOSED APPROACH

The primary goal of the suggested solution is to use a web crawler and web scrapping. The web crawler is the first thing required to gather huge volumes of data from multiple e-commerce sites. The fetched URLs are then sent to the scraper for the scrapping process and the Web Scrapping is used to extract HTML data from URLs from various websites. The data are scrapped from the various websites to show the price comparison for the searched products. For user data safety in this website we use AES algorithm & the admin is used for managing the user’s data and history of search. If any products have a discount price admin will send a message notification to the user mail-id.

II. METHODOLOGY

The entire system is implemented throughout price comparison algorithm and web mining in that they are two main phases; 1. web crawling 2. web scrapping

This website we use the AES algorithm to secure products and user information. The data of the products are stored in dynamic format in the database. In this website user’s can compare the products price and details form various e-commerce site in a single webpage. If any products has discounts in e-commerce website it will send the notification mail to the user’s mail-id.

i. Web crawling

Web crawling is a technique used by price comparison websites to gather product and pricing information from various retailers and vendors across the web. It involves using automated programs, commonly known as "web crawlers" or "spiders", to scan retailer and vendor websites and extract relevant data. The web crawlers are designed to navigate through the website's pages, following links and collecting data on each page they visit. They extract data such as product name, description, specifications, price, and availability. The data is then stored in the comparison website's database, where it is processed and displayed to users.

ii. Web scapping

Web scraping is an automatic method to obtain large amounts of data from websites. Most of this data is unstructured data in an HTML format which is then converted into structured data in a spreadsheet or a database so that it can be used in various applications. There are many different ways to perform web scraping to obtain data from websites. These include using online services, particular API’s or even creating your code for web scraping from scratch. Many large websites, like Google, Twitter, Facebook, StackOverflow, etc. have API’s that allow you to access their data in a structured format. This is the best option, but there are other sites that don’t allow users to access large amounts of data in a structured form or they are simply not that technologically advanced. In that situation, it’s best to use Web Scaping to scrape the website for data. Web scraping requires two parts, namely the crawler and the scraper. The crawler is an artificial intelligence algorithm that browses the web to search for the particular data required by following the links across the internet. The scraper, on the other hand, is a specific tool created to extract data from the website. The design of the scraper can vary greatly according to the complexity and scope of the project so that it can quickly and accurately extract the data.
iii. Price comparison Algorithm
The Price Comparison Algorithm is the backbone of any price comparison website. It is designed to compare the prices of similar products across different retailers and vendors to find the best deal. The algorithm takes into account a variety of factors such as product name, description, specifications, shipping costs, taxes, and discounts, and then uses this data to provide the most accurate pricing information. The algorithm identifies products with similar attributes, compares their prices, and presents the results to users in an easy-to-understand format. The user can then filter and sort the results based on their preferences to find the best deal.

iv. Algorithm used for security purpose
Algorithm used for securing the user information and product information. In this paper we use AES algorithm for securing the users & price information. The AES algorithm (also known as the Rijndael algorithm) is a symmetrical block cipher algorithm that takes plain text in blocks of 128 bits and converts them to cipher text using keys of 128, 192, and 256 bits. Since the AES algorithm is considered secure, it is in the worldwide standard. The AES algorithm uses a substitution-permutation, or SP network, with multiple rounds to produce cipher text. The number of rounds depends on the key size being used. A 128-bit key size dictates ten rounds, a 192-bit key size dictates 12 rounds, and a 256-bit key size has 14 rounds. Each of these rounds requires a round key, but since only one key is inputted into the algorithm, this key needs to be expanded to get keys for each round, including round 0.

III. IMPLEMENTATION
The suggested system works as follows: The backend system consists of two important techniques web crawling and web scraping. Web scraping is a technique that is used to extract information in a human-readable format and display it on the destination terminal. But before scrapping the output, Web Crawlers are responsible to navigate to the destination once the crawler reaches the correct page and matches up with the products, the scrapping process starts. Web scraping essentially consists of two tasks: the first is to load the desired web page and the second is to parse the HTML information of the page to locate the intended information as shown in fig-1. In this system, scraping is done using Java as it provides a rich set of libraries to address these tasks. “requests” is used to load the URLs, and the “jsoup” library is used to parse the web page as shown in fig-2. After scrapping the product information from different e-commerce websites, the data is displayed on the website front end consisting of the Main website. The users search for the required product in the search bar and the query is fired in the local database i.e., sqlite5. The website is designed using jsp and jsoup which are written in Java. Required results are retrieved and displayed on the Main website. The user can then compare the prices of products that are available on e-commerce websites. As soon as the user selects a low price, he will be redirected to the original e-commerce website. The products & user’s data are secured by AES algorithm as shown in fig-3. Another feature provided is a discount alert, in which the user can search for a product in a number of times if the product has any discount on it, then the admin can send the discount notice message to the email-id user.

Fig-3

Fig-4
IV. RESULT
Comparing prices of various e-commerce products, the output is displayed on a single web interface. This website aims to deliver the best possible offer to users. The product requested by the comparison of the price of the product and displaying the minimum price of various E-commerce sites such as shopclues, Flipkart, and snapdeal, that are in the lead. and some of the best online shopping sites. For reaching this web result, mining is done to get the details and the concept of the product needed. of web crawler and web scraper is used for pulling information from these products can be found on different e-commerce sites. The system will allow users to redirect to the website from which it originated. specific product chosen by the user to be the best price.

V. CONCLUSION
The comparison of e-commerce products utilizing web mining is web-based. The based system will assist users in making decisions while. Shopping for products online. This website will support users Analyze the prices that are present in the various e-commerce shopping. Web sites so that they learn to know the lowest price for the product. With a better understanding. The website will also feature the installation of Compare products with any of their specifications that belong to the same category. This will save shoppers efforts and valuable time. In the end, this will make it possible to group the strategies, the best offers and offers from all major e-commerce stores and will help shoppers make purchases Online.

REFERENCES
1. Ladislav Beranek, Radim Remes: E-commerce network with price comparator sites, IN 2019 IEEE IEEE International Conference on Data Mining.
5. Ahmad pourmini, shashramnasiri: Web content extraction using contextual rules, IN 2015 IEEE International Conference on knowledge based Engineering and innovation (KBEI)