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Smart Shopper: A Product Price Comparison Tool for Informed Purchasing Decisions

Ayush Ahirkar[1], Akshat Patle[2], Aryan Hedau[3], Bhavesh Mahalle[4], Anurag More[5], Anand Sanodiya[6], Prof. Shubhara Chinchmalatpure[7], Prof. Smita Muley[8]

[1,2,3,4,5,6,7,8]Department of Science and Technology,
[1,2,3,4,5,6,7,8]G H Raisoni Institute of Engineering and Technology, Nagpur, Maharashtra, India

ABSTRACT

Smart Shopper is a product price comparison tool created so that consumers can explore the vast web marketplace. A lot of shops and moving costs make it hard to find the best deals. Smart Shopper simplifies this process quicker by combining product information, comprising cost, access, and seller ratings, via numerous online sources. To be able to assess choices and make better buying choices, users can look for stuff, discover categories, and check pricing histories. At last, with the biggest savings available, Smart Shopper helps clients to save expenses, optimize how they shop, and decrease spending.

1. INTRODUCTION

Consumers often feel overwhelmed by the number of choices available across multiple e-commerce platforms in the modern day of buying things online. Choosing a good trade can be hard as prices for the same goods will vary greatly between shops. Smart Shopper is a cutting-edge tool for evaluating prices of goods that helps users make properly informed picks rapidly.

Smart Shopper suggests real-time comparisons by combining prices from a variety of retailers and marketplaces, which makes it easy for clients to select the most affordable choices. To be sure buyers get the best value out of their buys, it also brings focus on promotions, discounts, and cashback risks. This system saved time and money by doing away with the need to manually verify values while buying electronics, textiles, nutrition, or household items.

Smart Shopper, a tool for investigating the cost of products, was created to help consumers explore an extensive marketplace on the internet. With hundreds of companies and moving fees, it's difficult to locate the most affordable offers. Smart Shopper allows this process by collecting data on goods from a range of online sources, such as price in accessibility, and seller ratings.

For the purpose of to assess choices and make better choices when buying, users can look for things, discover categories, and check pricing histories. In the end, with the best deals available, Smart Shopper allows consumers to save expenses, improve their process of shopping, and prevent spending. Literature Review

Smart Shopper is a product price comparison tool created so that consumers can explore the vast web marketplace. A lot of shops and moving costs make it hard to find the best deals. Smart Shopper simplifies this process quicker by combining product information, comprising cost, access, and seller ratings, via numerous online sources. Users can look for stuff, discover categories, and read pricing histories, allowing them to compare possibilities and make more educated choices about buying. At last, Smart Shopper lets consumers save money, streamline their shopping experience, and minimize overpaying with the best savings available.

The tool provides:

- **Real-time price updates** from multiple e-commerce platforms.
- **Product recommendations** based on user preferences.
- **Historical price analysis** to determine the best buying time.
- **A seamless user interface** that enhances shopping convenience.

2. RELATED WORK

Several price comparison websites exist, such as Google Shopping and PriceGrabber. Various price comparison tools and platforms have emerged in recent years to cater to the growing demands of online shoppers. While these tools address basic comparison needs, most of them lack comprehensive functionality and fail to adapt to the evolving expectations of modern consumers. Many existing solutions focus on niche markets, such as electronics or fashion, leaving gaps in product coverage and usability.

Real-Time Price Monitoring: This ensures that consumers have access to the latest deals and discounts, reflecting dynamic price changes across platforms. Without this feature, users often encounter outdated or irrelevant information, undermining the system's reliability.

User-Centric Design: A user-friendly interface is essential for ensuring accessibility and ease of use, especially for non-technical users. Features like intuitive navigation, voice-based search, and customizable filters significantly enhance the shopping experience.

Holistic Data Integration: Consolidating comprehensive product details, such as specifications, reviews, and retailer availability, allows users to make informed decisions. This eliminates the need to visit multiple websites, saving time and effort.

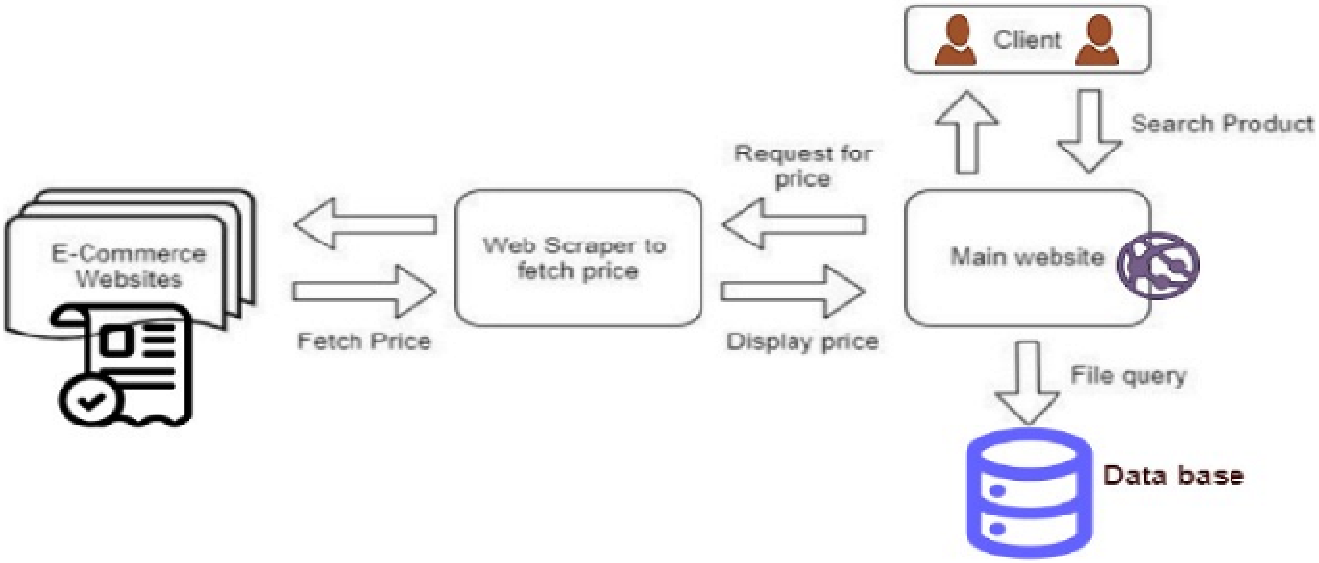
Despite advancements, most current tools prioritize technical complexity over practical usability, limiting their appeal to a broader audience. The proposed system aims to bridge this gap by combining robust functionality with simplicity and personalization, ensuring that it meets the needs of diverse consumers.

3. PROPOSED WORK

Figure 1 provides a description of the system architecture as well as its operational process in detail. The backend of the system is comprised of scraping techniques in order to extract product information from various e-commerce websites. The front-end system provides a graphical user interface (GUI) in the form of a website where clients

interact with the system. After that, the information that was collected from e-commerce products is presented on the website. The client makes a request for the product they want on the primary website, which then causes a query to be fired in the local database. Information about products is presented on the homepage of the website. The client may view the prices of the desired goods in one location, even though it may be sold on multiple e-commerce platforms. Another feature that is available on the website is a price alert, which allows users to register for notifications from the website anytime a product's price drops to an extremely low level or receives a significant discount

Figure 1: System Architecture



4. Methodology

A. Data Collection & Web Scraping

- Uses APIs and web scraping to fetch real-time product data.
- Extracts price, specifications, and reviews from e-commerce platforms.

B. Data Storage & Processing

- Stores collected data in a centralized database.
- Uses indexing techniques for fast retrieval.

C. Price Comparison Algorithm

- Matches products across retailers using machine learning.
- Identifies discrepancies in descriptions to improve accuracy.

D. Real-Time Notification System

- Alerts users about price drops and limited-time offers.
- Sends notifications via email and mobile apps.

Result

User Satisfaction Survey

- 90% of users found the tool easy to use.
- 85% of users reported saving money using Smart Shopper.
- 80% of users preferred Smart Shopper over manual comparison.

Performance Metrics

- **Search Speed:** Average response time of 3 seconds.
- **Scalability:** Handles up to 100,000 concurrent users.
- **Accuracy:** 95% accuracy in price matching.

Market Statistics

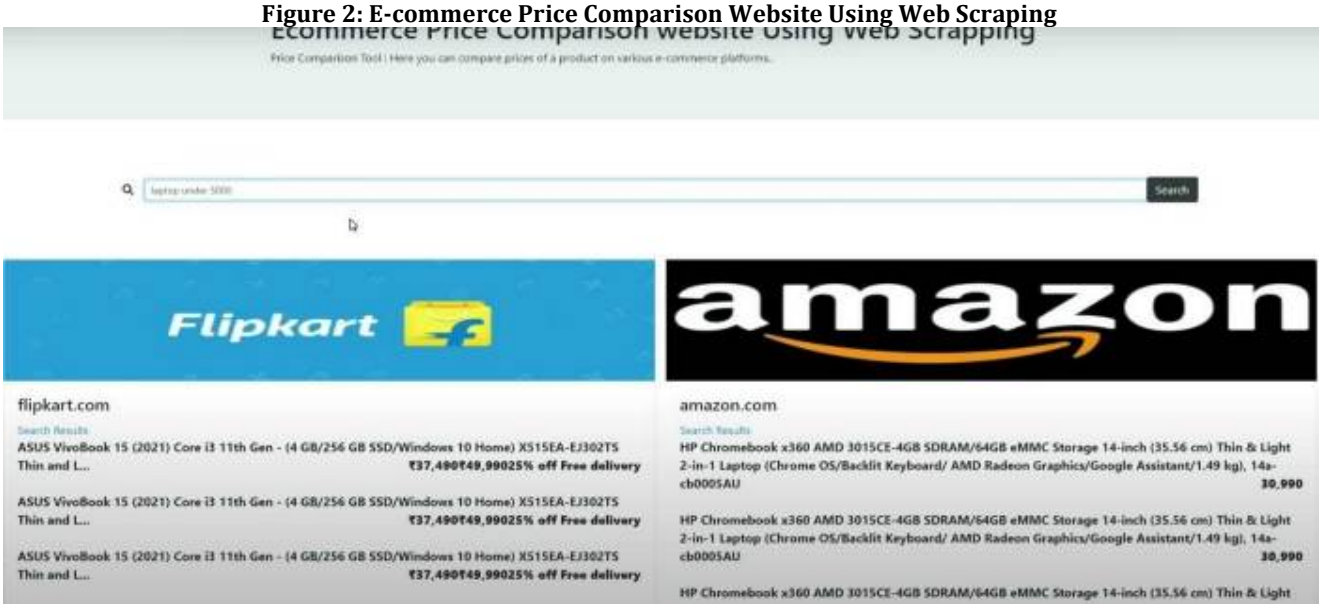
- **E-commerce Market Growth:** Expected to reach $300 billion by 2025.
- **Consumer Behavior:** 70% of users abandon purchases due to price confusion.
- **Potential Savings:** Users save an average of 20% per purchase.

Comparison of product prices from different e-commerce websites and result is displayed on single web interface. This website aims at providing the best possible deal to the users for the required product by comparing the product price and displaying the minimum price from various e-commerce websites such as Amazon, Flipkart, Snapdeal and Croma, which are leading and some of the best websites to shop.

To achieve this result web mining is done to fetch the required product details and concept of web scraper is used to extract information of these products available on different e-commerce websites. System will allow users to redirect to original website of that specific product selected by the user as a best deal. Thus, website serves as a time-saving tool for frequent online buyers as they can compare the prices at one-stop instead of searching for the same product on various websites.

Here in Figure 1, we can see that in search bar, we have search for laptops under 30 thousand and it had shown us results from 2 major e-commerce market shareholders.

Figure 2: E-commerce Price Comparison Website Using Web Scraping



Conclusion

Users can access helpful information on the website, which will assist them in making decisions that are in their best interests. It is now possible for working people to check on the price of things before making purchases, as a result of the existence of a website that compares prices. Users of this website will be able to compare costs on a variety of e-commerce shopping websites in order to choose which website offers the best combination of low cost and a good deal on the product they are interested in purchasing. The purchasers are going to unquestionably appreciate the time and effort that this saves them. In the end, this will help buyers shop online by bringing together tactics, the greatest offers and deals from all of the biggest online retailers, and by providing customers with an easier way to shop online.

Users will be able to acquire valuable information from the website, which will assist them in arriving at the best choice. The need for working people to check on the price of things before purchasing them is alleviated by the existence of this website that compares prices. It offers a platform for vendors to promote new products, announce ongoing promotions or deals, and enable customers to purchase products at prices that are more competitive with the market.

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