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Product Comparison in E-Commerce: A Comprehensive Analysis

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Abstract - *Customers have plenty of options in the rapidly evolving e-commerce scene, which makes it difficult to identify the most convenient and affordable solutions. This study explores the topic of product comparison in e-commerce to offer a thorough examination of a range of products on various online platforms. Finding the least expensive and most convenient options for customers is the main goal. We collect, process, and analyse product information from several e-commerce websites using a systematic methodology in our study that makes use of advanced data analytics approaches. We consider variables like pricing, shipping, time of delivery, client feedback, and overall user experience. We aim to provide useful insights into dynamic pricing strategies and user satisfaction by employing a comprehensive methodology. This study also looks into how consumer preferences, brand reputation, and product attributes affect the decision-making process. Our objective is to offer a comprehensive comprehension of the intricacies associated with product comparison in the e-commerce domain by means of the assessment of a wide array of product classifications. The results of this study should help consumers who are looking to get the best deal possible and help e-commerce platforms become more competitive. Our research attempts to add to the current conversation on making online buying more transparent and focused on the needs of the customer as the e-commerce sector develops.*

Key Words: *- web scrapper, e-commerce, web crawler, Django, Price comparison*

1. INTRODUCTION

The modern era is marked by an incredible rise in internet commerce, with e-commerce growing into a massive marketplace for easy and simple product acquisition. The widespread availability of smart devices and other online platforms has enabled customers to make purchases from almost any place, hence promoting the ongoing development of the e-commerce environment. This paradigm change has greatly increased consumer participation in online shopping, which is driving the expansion of the e-commerce industry. But as more and more e-commerce websites have emerged, customers now face a dilemma as they must search across several platforms in order to compare and choose products. This makes it difficult for customers to compare prices across different online marketplaces and locate the best offers. As a result, the suggested solution seeks to empower consumers of the internet by enabling smooth product comparison from many e-commerce websites via a single web interface. Users will save a great deal of time, money, and effort by doing this because they will be able to find the greatest discounts for a specific product without having to search through many web platforms.

This is done by providing insights about pricing strategies and user satisfaction. This review contributes to the understanding of product comparison in e-commerce. Additionally this review also focuses on how consumer preferences, product attributes, brand reputation affect the decision making process.

2. LITERATURE REVIEW

During our research for this project, we observed a common practice among e-commerce websites. Many e-commerce platforms use sales and pricing strategies to attract customers. However, we found that these "sales" were often more of a marketing gimmick than a genuine discount. For example, Flipkart, one of India's largest e-commerce websites, often puts its most popular items on sale but only reduces their prices by a small margin. At the same time, the prices of accessories or complementary products are increased, allowing the site to recover its losses from the discounted items. This strategy creates the illusion of a sale while ensuring that the website remains profitable. Similarly, Amazon, a global e-commerce giant, uses a technique called "price anchoring". With price anchoring, a higher-priced item (the anchor) is initially presented to the consumer, indicating that the value of the product is high. Subsequently, a slightly discounted price is offered on the actual price, making it seem like a significant discount. The observation of these pricing strategies was the foundation of our idea for this project. We were intrigued by how e-commerce websites use pricing tactics to influence consumer behavior. This led us to explore the topic of product comparison in e-commerce, with a focus on providing consumers with a tool to navigate these pricing strategies and find the best deals online. Research papers form IEEE website contributed towards our research and understanding on how our project will work

1) The use of web scraping in computer parts and assembly price comparison LR Julian, F Natalia - 2015 3rd International Conference on, 2015 - ieeexplore.ieee.org

This paper explores the use of web scraping techniques to compare prices of computer parts and assemblies. The authors discuss the challenges and benefits of web scraping in this context, highlighting the importance of accurate and timely data extraction. They also provide insights into the implementation of web scraping tools and techniques for price comparison in the computer hardware industry.

2) E-Commerce Web-Crawling to Facilitate Consumers for Economical Choices S Saeed, M Naqvi, M Memon - International Journal of ..., 2020 - journal.scientiaca.org

This paper focuses on the use of web crawling in e-commerce to help consumers make more economical choices. The authors discuss the role of web crawling in collecting and analyzing product information from e-commerce websites. They highlight the benefits of web crawling in providing consumers with access to a wide range of products and prices, ultimately empowering them to make informed purchasing decisions.

3. METHODOLOGY

3.1 Web Crawler:

To build the price comparison engine, a web crawler is essential for gathering a large amount of data from various e-commerce websites. Manually collecting data from these websites is impractical, so a web crawler is used to navigate to these sites and fetch their URLs. These URLs are then sent to a scraper for the scraping process.

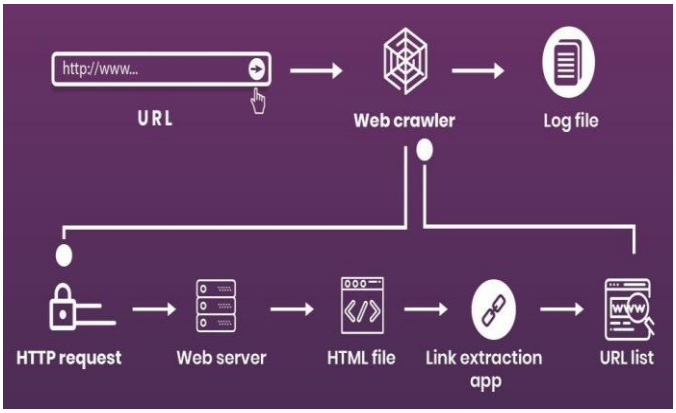

Fig -1: Web Crawler

3.2 Web Scraper:

Web scraping involves extracting HTML data from URLs for personal use. Since this is a price comparison website, data is scraped from multiple e-commerce websites. In this system, web scraping is performed using Python libraries such as requests and BeautifulSoup4. BeautifulSoup4 is particularly useful for parsing HTML pages. Using these libraries, product information from different e-commerce sites is scraped and stored in a database.

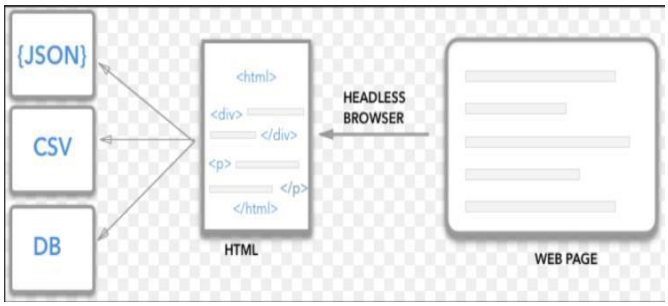

Fig -2: Web Scrapper

3.3 Django Web Framework:

Django is a Python web framework that expedites web development by enabling efficient coding practices. It is designed to simplify the construction of complex, database-oriented websites. Django facilitates component reuse, rapid development, and code minimization. Python is extensively used within the Django framework, including in configuration files and data models.

4. CONCLUSIONS

In conclusion, this study has went deep into the practice of product comparison in e-commerce, focusing on finding the best online deals for consumers. Through web scraping and crawling, we collected and analyzed data from various e-commerce websites, revealing the various pricing tactics used by online retailers. Our findings focuses on the importance of informed decision-making in online shopping and the value of tools that enable consumers to make economical choices. The development of our price comparison engine using the Django framework demonstrates the practical application of our research, aiming to enhance transparency and fairness in the e-commerce market.

5. FUTURE SCOPE

Future research could explore integrating AI and ML algorithms to enhance price comparison tools by analyzing consumer behavior and market trends, providing personalized recommendations, and offering real-time price updates. Moreover, establishing frameworks and regulations to ensure fair pricing practices and safeguard consumer data in e-commerce is absolutely necessary. Expanding the scope of price comparison tools to include a wider range of products and services, such as travel and accommodation, could also benefit consumers in making informed decisions. Overall, this would help promote a fair and competitive online marketplace.

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