

Data Analysis and Visualisation of Budget Laptops

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Abstract— This paper uses Tableau and Python tools to give a thorough analysis and visualization of cheap computers that are accessible on Flipkart and Amazon. Data is carefully processed after being pulled from both sites to guarantee consistency. Comparative study is done on important factors like cost, features, and client opinions. Data is cleaned, processed, and first visualizations are created using Python tools like Pandas, Matplotlib, and Seaborn, which give a clear picture of the key trends. Tableau is used to create interactive dashboards that make it easier for users to study the data. The study provides consumers with useful information by outlining the benefits and drawbacks of each platform when buying laptops on a limited budget. This initiative helps users make educated decisions by providing data-driven insights and interactive representations when evaluating laptops available on Flipkart and Amazon, eventually acting as a helpful guide for consumers looking for reasonably priced laptop options in the crowded online marketplace

Keywords: Flipkart, Amazon, Python, Tableau, E-commerce, and Data Analysis

I. INTRODUCTION AND RELATED WORK

Due to the explosive rise of e-commerce, sites like Flipkart and Amazon are now popular choices for shoppers looking for a wide range of goods, including inexpensive computers. But with so many possibilities, it can be difficult for buyers to make wise selections, particularly when taking into account crucial elements like cost, functionality, and user ratings. In order to solve this problem, our research offers a thorough evaluation and comparison of the inexpensive laptops that are offered by Flipkart and Amazon.

First, the project scrapes pertinent laptop data from both marketplaces, emphasizing characteristics, pricing, and user reviews. Accurate comparisons depend on the two systems' data being consistent. Pandas, Matplotlib, and Seaborn are a few of the Python libraries used in the analysis for data processing, cleaning, and preliminary visualizations. These tools assist in identifying patterns and trends in the price and feature sets of laptops across the two e-commerce platforms.

Interactive dashboards are made with Tableau to improve the user experience. With the help of these dynamically explorable and interactive data visualizations, users can quickly compare laptops based on a variety of characteristics. Finally, by providing insightful information about the advantages and disadvantages of both platforms, this research enables cost-conscious shoppers to make more informed choices when purchasing laptops online.

II. OBJECTIVE OF THE PROJECT

1. Gathering and Maintaining Data:

The main goal is to steal information on inexpensive laptops from Amazon and Flipkart. This involves retrieving information such as cost, features, and feedback from customers. A meaningful comparison depends on maintaining consistency in the style and structure of the data, since the metrics and presentation of data from other platforms may differ.

2. Python-Based Data Analysis :

Processing the data with Python packages like Matplotlib, Seaborn, and Pandas is another objective. In order to find trends and patterns in the features, price, and user reviews on both platforms, this entails sorting, cleansing, and conducting exploratory data analysis.

3. Comparative Evaluation :

Comparing Flipkart vs Amazon according to important criteria like price, laptop functionality, and user reviews is an important goal. The intention is to draw attention to any distinctions between the platforms that can affect the decisions made by customers, particularly those who are searching for affordable solutions.

4. Tableau Interactive Visualizations:

Making interactive Tableau dashboards to show the results in an approachable manner is the ultimate goal. By comparing the salient features of laptops on rival e-commerce platforms, customers will be able to quickly make better educated

judgments by exploring different elements of the data dynamically using these visualizations.

5. Analysis of Customer Reviews' Sentiment:

This goal goes beyond just comparing ratings; it also attempts to analyze customer reviews for both platforms using Natural Language Processing (NLP) methods. The initiative offers deeper insights into consumer happiness and dissatisfaction by analyzing the feelings stated in evaluations, such as favorable or negative feedback on particular attributes like battery life or performance.

6. Time-Series Trend Analysis:

Examining pricing patterns and customer satisfaction over time is another goal. The software can spot possible sales patterns, seasonal discounts, or even point out product improvements or quality declines over time on both Flipkart and Amazon by looking at how laptop prices change and how consumer feedback changes.

7. Recommendations Specific to Each Platform :

The ultimate goal is to offer recommendations tailored to individual platforms. The initiative will determine whether platform provides better deals for specific sorts of low-cost laptops based on the comparison analysis. Users can use this to determine whether Flipkart or Amazon is a better fit for their needs based on criteria like price, customer satisfaction, or certain product attributes.

III. EXISTING SYSTEM

These days, there is an enormous selection of things available on e-commerce sites like Flipkart and Amazon, including inexpensive computers.

Product details, costs, and customer reviews are available on both sites; nevertheless, the information is frequently dispersed and difficult to compare. To make selections about what to buy, consumers usually have to go back and forth between different sites, carefully weighing features, costs, and reviews. Furthermore, the information displayed on these platforms may not be comprehensive in its insights into pricing patterns over time, functionality, or customer happiness, or it may be formatted inconsistently.

Customers thus have a hard time locating the solutions that offer the most value for their money based on trustworthy information.

The Project's Goal :

By automating the process of obtaining, purifying, and evaluating data from Flipkart and Amazon, the project seeks to close this gap. The primary goals are to present a thorough analysis of low-cost laptops based on cost, features, and user reviews. Python modules like Matplotlib, Seaborn, and Pandas are used to process and visualize the data in a format that is simple to understand. The project also makes use of Tableau to generate dynamic interactive dashboards that let users examine and contrast important data points. By solving existing system limitations, the addition of pricing patterns

and sentiment analysis gives consumers greater insights than just cost and specifications.

Project's Scope:

This project's scope goes beyond a straightforward data comparison. Through the integration of in-depth analysis on a range of aspects, such as pricing changes, customer sentiment, and platform-specific strengths, it offers consumers a comprehensive tool to make informed selections. Although the initiative focuses on low-cost laptops, additional product categories might be easily analyzed using the same methods. Moreover, Tableau's interactive dashboards enable users to customize their analysis according to their preferences, making it an accessible tool for individuals with diverse technical proficiency. Long-term plans for this project include adding support for additional ecommerce platforms and predicting pricing patterns with predictive analytics, which will improve the ability of consumers to make decisions.

IV. PROPOSED SYSTEM:

The goal of the suggested technique is to offer a thorough method for evaluating and contrasting inexpensive laptops offered by Flipkart and Amazon. To provide in-depth insights into crucial elements like cost, features, and user evaluations, it automates data extraction, processing, and visualization.

The system consists of four main parts:

Tableau interactive dashboards, Python-based exploratory data analysis (EDA), data cleaning and processing, and data scraping.

The solution guarantees a solid basis for analysis by utilizing Python packages such as Seaborn for initial visualizations and Pandas for data manipulation.

The user experience is further improved by the dynamic data exploration made possible by the interactive Tableau dashboards.

Time-series analysis monitors price patterns over time, while Natural Language Processing (NLP) is utilized for sentiment analysis of customer feedback.

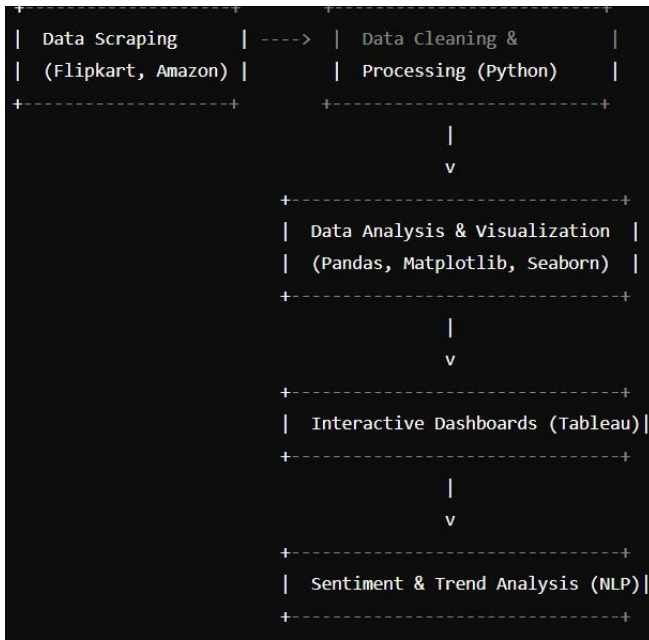


Fig : 1 BLOCK SCHEMATIC

The proposed system's data scraping algorithm:

1. Enter the URLs of the Flipkart and Amazon:

listings for inexpensive laptops. Procedure: Utilize the BeautifulSoup or Selenium packages in Python to retrieve information on laptop features, cost, and user feedback. Output: For both platforms, raw data in JSON/CSV format. Data Preparation and Cleaning:

2. Data scraped for input:

Process: Deal with outliers and missing values. Standardize data formats (like specs for laptops and currencies). Use Pandas to combine data from the two platforms into a single structure. Output: Data that is organized and ready for analysis.

3. Analyzing exploratory data (EDA):

Clean data was entered.

Method: To make visualizations like as box plots, histograms, and bar charts, use Matplotlib and Seaborn. Examine features, cost, and customer feedback. Output: The first visual perceptions of distributions, trends, and comparisons. Tableau Interactive Dashboards:

4. Data processing and visualizations are the input:

Procedure: Load data into Tableau and build interactive dashboards with rating, specification, and price range filters. Result: Interactive visuals that allow users to engage and gain deeper understanding

5. Analysis of sentiment and trends:

User evaluations as input.

Procedure: Perform sentiment analysis using natural language processing (NLP) methods using Python's TextBlob or VADER packages.

Use time-series analysis to monitor patterns in customer reviews and pricing over time. Output: Trend charts and sentiment scores that shed light on price changes and user satisfaction.

5. Tableau Workspaces:

A. Goal:

Develop interactive dashboards that graphically convey important insights.

B. Elements Filterable Charts:

Allow customers to narrow their search results based on brand, price range, and additional laptop specs.

C. Customer Sentiment Analysis:

This dashboard displays the general opinion of users regarding laptops across both platforms by compiling reviews and ratings from customers.

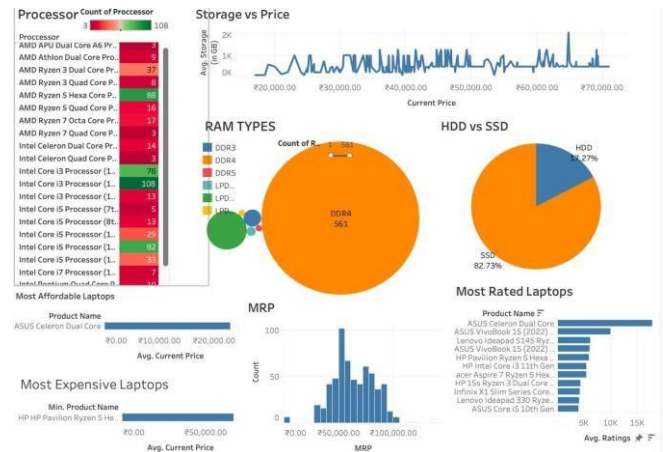


Fig :2.1 FLIPKART DASHBOARD

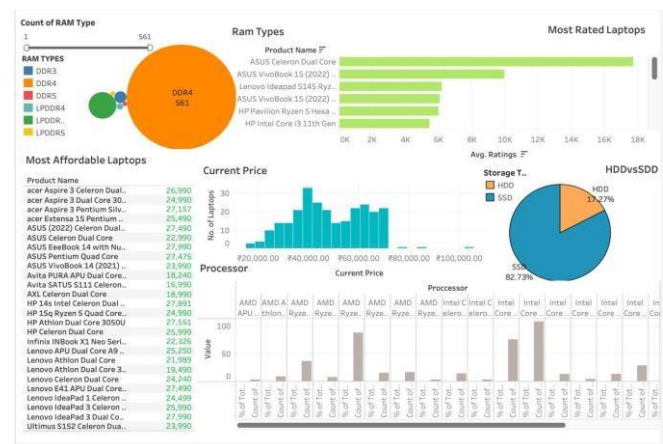


Fig: 2.2 AMAZON DASHBOARD

V. CONCLUSION:

The difficulties that customers encounter while comparing inexpensive computers on Flipkart and Amazon are satisfactorily addressed by this approach. The technology makes it easier and more organized to compare important

elements like cost, features, and user evaluations by automating the data gathering, cleaning, and analysis procedures. Python libraries that provide efficient data processing and visualization, providing lucid insights into trends and patterns, including Pandas, Matplotlib, and Seaborn. Additionally, by enabling users to assess customer happiness beyond star ratings, the incorporation of Natural Language Processing (NLP) for sentiment analysis deepens the analysis. Tableau dashboards that are interactive allow users to dynamically explore the data, making them a versatile tool for customers with different needs and preferences

In the end, this project shows the value of fusing data science methods with e-commerce analysis while also assisting customers in making knowledgeable judgments while buying inexpensive laptops. Compared to manual product comparisons, the system's capacity to compare platforms, evaluate sentiment, and track trends over time is a considerable gain. This framework has the potential to be expanded to other product categories and enhanced with predictive analytics, thereby creating a comprehensive online decisionsupport system.

VI. FUTURE ENHANCEMENT :

The project's main goal for the future is to expand its scope to include e-commerce platforms other than Flipkart and Amazon. Consumers would have access to a greater selection of low-cost laptops and other possibilities, improving the comparative analysis, if data from more online merchants were integrated. To ensure consistent data quality across several platforms, this would need modifying the data scraping procedures to suit diverse website structures and formats. Personalized recommendations based on customer preferences and past data might also be provided by machine learning algorithms, allowing for a more customized shopping experience.

Using predictive analytics to project future pricing trends and user ratings is another possible improvement. The technology may forecast price decreases or rises by using historical data and invaluable advice and comments during the project

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