Analysis Of Products Based On Dynamically Selected Features


Abstract: In this internet era, before buying any product, customers are searching for the product details online, comparing the features and prices of the product produced by different companies to analyze and select best of them. The company web sites or product comparison web sites will give the specifications with respect to all the features. But a common user may not be interested in going through all features. One may specifically be interested in some features and want to buy best product with respect to those features. The key features of a product are represented by its key performance indicators which are the metrics used by companies for measuring product’s effectiveness in improving the product’s sales. The main objective of this paper is to make use of the key performance indicators specified by the company with respect to the product and develop an easy to use web application frame work which can show the comparison and analysis of different companies products based on user selected features at run time using jsoup and web crawler.

I. INTRODUCTION

Taking the decision of choosing the best product or organization from different alternatives is a regular task for humans in many aspects related to their daily life. They choose the best dress, best home appliance, best school or college for study, best course to study, best place to start the business etc., from different alternatives regularly. But when choosing one from many alternatives, each and every user may be interested in some specific features. For example, when buying a mobile, one may be more specific in battery backup, one may be interested in memory size and one may be interested in picture quality etc., So it will be useful for a user if one can get the comparison and analysis of a product from different companies based on the specified features.

Every product or a company will have key performance indicators (KPIs) [1], [2] which are the metrics to measure the features and allow the product to gain a competitive advantage over others in the same market. The main objective of this paper is to design an easy to use web application framework which allow the user to select a product and the features based on which the analysis to be done. This will get the information of the product from the specification pages of the company and product comparison websites by using the web crawler which is implemented using Jsoup[3]. The collected KPIs are analyzed and compared for better decision making by the users. This can also be used to compare different companies like google and yahoo.

II. LITERATURE SURVEY

In recent years with the rapid growth of internet, users are using the net for selecting a product or organization, and they are asking a search engine to show the comparison of the product or organization based on some key features. T Khan, MAMSR Ansari, MAMAR Siddiqi [4] used data mining techniques to compare the prices of the product from different e-commerce sites. They used crawlers and scrapers to get the data from different sites. In [5], Mohammed Badawy a, A.A. Abd El-Aziz identified the best ways for determining KPIs either manually or automatically when applied in different fields and there by achieving the organizational objective by verifying different approaches. In [6], Arora Amishi, Kasur sukhbir developed a questionnaire based on key parameters of the organization and they are ranked based on their stake holders response for better identification of key performance indicators for identification of employee performance indicators but author faces difficulty in preparing the questionnaire and quantifying it. In [7], Mohammed Badawy a, A.A. Abd El-Aziz represents a model that is constructed based on key performance indicators and Analytical Hierarchical Processor for measuring institutional success and for self-assessment of the organization. In [8], W. Peng, T. Sun, P. Rose, T. L proposed different kinds of on performance indicators like Leading indicator: that shows effect on future performance of the organization, Lagging indicator: It measures the output of past activities and remembers their impact and Diagnostic Indicators that determines the health of the organization. In [9], [10] how to parse the data using jsoup is explained.

III. PROPOSED WORK

The present research proposes an easy to use product comparison framework that includes data crawling, information extraction and data analysis of a product or company data from Internet. Here users can interact with a web application where users can login and select the products for which they want to compare the features. The...
Data related to all features of the products are collected from the product comparison websites like gsmarena.com [11] or diffen.com [12] using the crawler on the Eclipse IDE and sent to the database for storing. The data crawling and extraction takes Jsoup, a HTML collector as fundamental technology and data is stored in MySQL database. Then, based on the users selected features, the corresponding KPIs are subjected to the analytical process and data comparison is performed and analysis charts are displayed using Jfree chart. This helps the users to get the comparison between the products of different companies and help them to find cost-effective products. Fig. 1 shows the complete flow diagram of the proposed work.

Fig. 2 shows the algorithm for the implementation of analysis of products from dynamic web pages. In the web application, user need to select the products and required performance indicator features in check boxes. Then JSOUP library is used to connect the web url using Jsoup.connect(url).get().

**IV. EXPERIMENTAL RESULTS**

The experimentation was done by comparing the features of two products. In the experimentation, web application was created using servlets. The user interface prompts the user to select the products he/she wants to compare. The products selected were Redmi 4 and Moto G5 mobiles. Fig. 3, Fig. 4 shows the user interface for selecting the products. Fig 5 shows the user selected products.

![Fig. 1. Complete WorkFlow Diagram](image1)

![Fig. 3. Input selection for the first product](image2)
After taking the user input, the crawler crawls the data from product comparison site called diffen.com. Then the data in the pages is read and parsed into a data schema with the Parse Data activity and then it is inserted into a table using JDBC Update activity.

A Graphical User Interface was provided in the framework developed using servlets where the user can check the selected features as shown in Fig. 6. Here user selected the major performance features as RAM, Battery power and camera. After selecting the required parameters, the output displays the comparison of selected features as shown Fig. 7. Fig. 8, Fig. 9 shows the comparisons in terms of percentages. The selected features were 3 and in those three, ram is 2GB more in motto (ram in Moto is 4GB and in Redmi is 2GB), battery power is more in Redmi (4100Ah in Redmi and 2800mAh in Moto), and capacity of camera is same in both companies (13Mp). The comparison analysis shows the equality or superiority in terms of percentages. So it was showing that both products were equal 33.3 % times and each product is superior to the other 33.3% times.

V. CONCLUSION
A web application framework to compare the products of different companies based on key features selected by the user is developed which make the users to do the comparisons easily before purchasing the products. The framework work can also be applied to compare the features of different organizations as well.
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Fig. 8. comparison in percentage

<table>
<thead>
<tr>
<th>Checked Values are:</th>
<th>redmi</th>
<th>motto</th>
<th>Equal</th>
</tr>
</thead>
<tbody>
<tr>
<td>rain, Battery, Power, camera</td>
<td>33.0</td>
<td>33.0</td>
<td>33.0</td>
</tr>
</tbody>
</table>

Fig. 9. Comparison graph in percentage

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