

# Analysis Of Products Based On Dynamically Selected Features

Anuradha. T, Praveena. N, Lakshmi Surekha. T

**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*

**Index Terms:** *jsoup, JDBC update, KPI, parse data, servlet, 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

**Revised Manuscript Received on June 15, 2019**

**Anuradha T**, Department of Information Technology, Velegapudi Ramakrishna Siddhartha Engineering College, Vijayawada, AP, India.

**Praveena N**, Department of Information Technology, Velegapudi Ramakrishna Siddhartha Engineering College, Vijayawada, AP, India.

**Lakshmi Surekha T**, Department of Information Technology, Velegapudi Ramakrishna Siddhartha Engineering College, Vijayawada, AP, India.



## Analysis Of Products Based On Dynamically Selected Features

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().

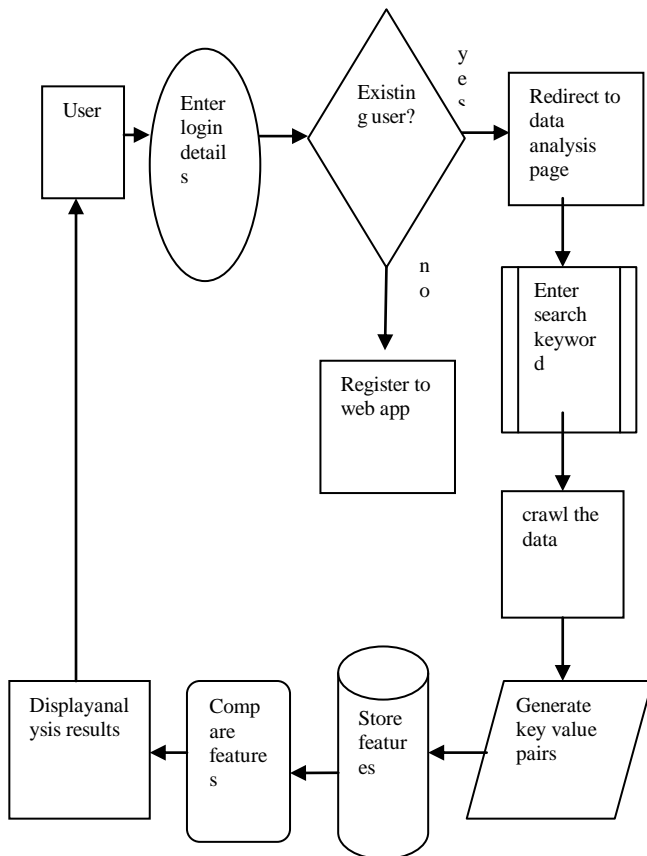


Fig. 1. Complete WorkFlow Diagram

### Step1:

- Get the data from UI  
//sected KPI's in checkboxes.
- crawl the data from product comparison sites as per the user request.

### Step2:

- Parse the data using Split function
- get key value pairs
- persist the data in to the Mysql Database collected by the crawler.

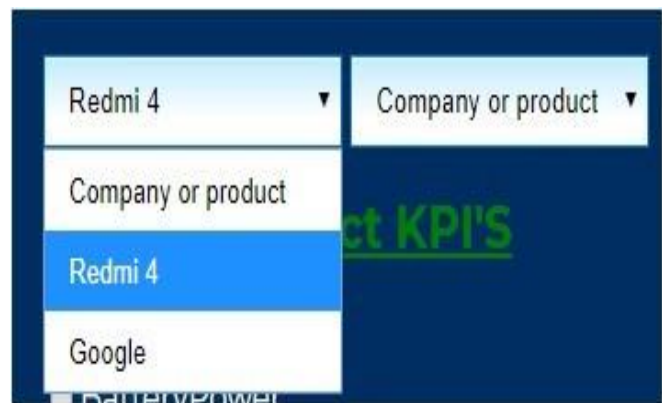
### Step 3:

- Fetch the data from database as per to the user checked features
- Perform the comparison and display in plots through "Jfree chart" and "Jcommon" package.

## 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

Fig. 2. Algorithm for implementation of dynamic analysis of products select the products he/she wants to compare. The products selected were Redmi 4 and Motto G5 mobiles. Fig. 3, Fig. 4 shows the user interface for selecting the products. Fig 5 shows the



user selected products.

Fig. 3. Input selection for the first product



Fig. 4. Input selection for the second product



Fig.5. user selected products

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 Motto is 4GB and in Redmi is 2GB), battery power is more in Redmi (4100Ah in Redmi and 2800mAh in Motto), 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.



Fig. 6. Selected Key performance features

Factor	redmi	motto
ram	2GB	4GB
BatteryPower	4100Ah	2800mAh
camera	13MP	13MP

Fig.7. comparison between products

## Comparison percentage

Checked Values are--	redmi	motto	Equal
[ram, BatteryPower, camera]	33.0	33.0	33.0

Fig. 8. comparison in percentage

## Comparison between redmi and motto

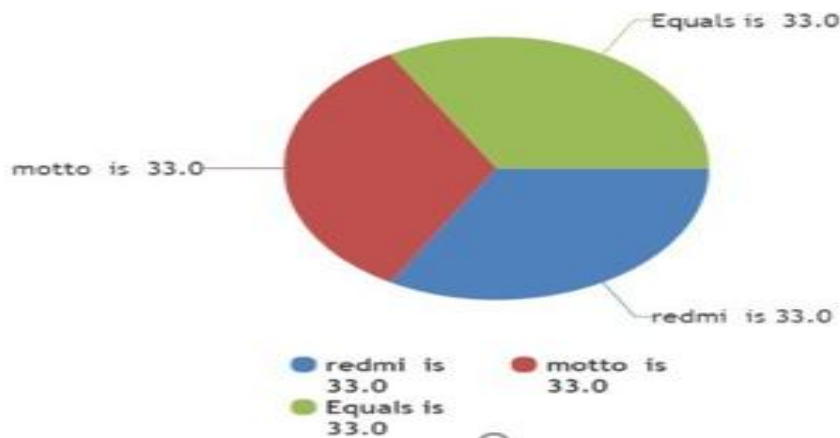


Fig. 9. Comparison graph in percentage

### REFERENCES

1. P. Paul Gruhn. "The Crawling and analysis of a agricultural products big data based on Soup", Vol.VI , No 1,17th August 2015.
2. Yuchen Jiang , Shen Yin "Comparison of KPI related fault detection algorithms." Industrial Electronics Society, IECON 2016-45ND Annual Conference on IEEE. December 2016
3. Extract attributes, text, and HTML from elements [online] Available at: <https://jsoup.org/cookbook/extracting-data/attributes-text-html>
4. Khan, Tabrez, Mohd Azam Mohd Salim Reshma Ansari, and Muzammil Ahmad Mansoor Ahmad Razia Siddiqi. "Real Time Product Analysis using Data Mining." (2015). Project report submitted to Anjuman-I-Islam's Kalsekar Technical Campus, Mumbai.
5. MohammedBadawya A.A. AbdEl-AzizaAmiraM.IdressbHeshamHefnyaShroukHossamcFuture Computing and Informatics JournalVolume 1, Issues 1–2, December 2016, Pages 47-52
6. Arora Amishi, Kasur Sukhbir .Performance assessment model for management educators based on KRA/KPI. InInternational conference on technology and business management March, vol.23;2015
7. Mohammed Badawya a, A.A. Abd El-Aziz , Key Performance Indicators Measurement Model Based on Analytic Hierarchy Process and Trend-Comparative Dimension in Higher Education Institution. ISAHF 2007, Viña Del Mar, Chile, August 3, 2007
8. W. Peng, T. Sun, P. Rose, T. Li. A semi-automatic system with an iterative learning method for discovering the leading indicators in business processes Proceedings of the 2007 international workshop on domain driven data mining, ACM (2007)
9. Mr Bool, How to create a Web Crawler and storing data using Java [online] accessed jan 10<sup>th</sup> 2019, Available <http://mrbool.com/how-to-create-a-web-crawler-and-storing-data-using-java/28925>.
10. Java Code Examples - Program Creek [online] Available: <https://www.programcreek.com/2012/12/how-to-make-a-web-crawler-using-java/>

11. phone finder, gsmarena.com, <https://www.gsmarena.com/>
12. Diffen, Compare anything, <https://www.diffen.com/>

### AUTHORS PROFILE



**Anuradha. T** Ph.D from Acharya Nagarjuna University, Working as professor in VR Siddhartha Engineering College, AP, India. Research Areas Data Mining and Machine Learning. Published more than 40 research papers in reputed journals and conferences.



**Praveena. N** persuing Ph.D from KL deemed to be University, Working as Assistant professor in VR Siddhartha Engineering College, AP, India. Research Areas Computer Networks and Cloud Computing. Published nearly 10 research papers in reputed journals and conferences



**Lakshmi Surekha . T** M.Tech from Acharya Nagarjuna University, Working as Assistant professor in VR Siddhartha Engineering College, AP, India. Research Areas Data Mining and Machine Learning. Published nearly 10 research papers in reputed journals and conferences

