

**Project Report for**

**Competitive Product**

**and Social Network Analysis**

**on GSM Arena**

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9. **Introduction**

Pricing of the product is the crucial thing when it comes to product selling. Any business needs to research its competitor before launching a new product. With increasing competition, it is difficult to attract customers. Hence, a company needs to determine who are the competitors, what products they offer and analyze the pricing. Based on these factors decide the price for the product so that it can attract more customers.

1. **Preliminary Literature Review**

The paper Mobile targeting using customer trajectory patterns focuses on how a company uses data to give better recommendations to its customers based on their shopping experience. In this research, the company asked users to fill a survey form while logging in to their Wi-Fi network. This was the data that was used to develop a model to predict the outcome of whether a customer will make a purchase or not and gives shopping recommendations to customers. It helped the company increase its profits and improve customer experience. In our project, we will approach a slightly different business problem. This project will help businesses looking forward to launching a new product in the market.

1. **Objectives**

* Creating an exciting experience amongst its visitors with an attractive
* Determine who your competitors are.
* Determine what products your competitors offer.
* Research your competitor's sales tactics and results.
* Look at your competitor's pricing, as well as any perks they offer. 5. Take note of your competition's content strategy.
* Learn what technology stack your competitor uses.
* Analyze the level of engagement on your competitor's content.
* Perform a SWOT Analysis to learn their strengths, weaknesses, opportunities, and threats.

1. **Data Visualization**

The visualization for the features of the product with respect to the price were observed and analyzed as follows.

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Chart, pie chart

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1. **Methodology**

It comprises of steps.

We have followed two approaches – Machine learning approach & NLP based approach.

* Machine learning based approach:

We have extracted the features of the product from GSM arena website & categorized the categorical variables into binary variables. For instance, price data categorized into low & high.

We have used the random forest classifier to classify weather the product price is classified as high or low.

Using grid search CLV the best features were extracted, and those features were given to the input model.

It gave us the accuracy of 88.09%.

* NLP Based Approach:
* Pre-Processing

The data which was extracted had unnecessary information which was not relevant. The data was cleaned & then used for model preparation.

Feature Engineering: Using onehot encoding the categorical variable were categorized into binary variable.

* Aspect description approach

In this approach the reviews extracted for a specific product are taken into consideration.

From these reviews the nouns that is the feature of the product are extracted & the corresponding adjectives/adverbs are extracted as well. For instance, camera- good.

* Sentimental analysis

The reviews extracted were analyzed & accordingly the sentiments were evaluated. Using the polarity scores each feature had been given polarity scores ranging from 0 to 1.

Polarity score- > 0 = high polarity score, < 0 = low polarity score.

1. **Brief Project Schedule**

|  |  |
| --- | --- |
| Task |  |
| Data Collection |  |
| Data Preprocessing |  |
| Exploratory data analysis |  |
| Feature engineering, feature selection |  |
| Model selection & training (ML/DL) |  |
| Test model accuracy |  |
| Hyperparameter tuning |  |
| Social network analysis |  |
| Research report writing | Hinal Panchal |

1. **Results**

The sentimental count with respect to the count is analyzed as:

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1. **Conclusion**

With machine learning model, applying the decent amount of data to the model, the accuracy comes out to be approximately 88.09%. While considering the NLP- based approach, the data provided was less as compared to the ML approach. Hence, we saw that the accuracy given by NLP model is comparatively less than the accuracy provided by the ML model. Given the larger amount of data to the NLP model, the model will be able to perform much efficiently thus improving the accuracy as well.

1. **References**

* https://blog.hubspot.com/marketing/competitive-analysis-kit
* https://www.gsmarena.com/search.php3?