

ASPECT-BASED SENTIMENT ANALYSIS OF CLOTHING REVIEWS

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INTRODUCTION

Understanding what customers think is crucial for the fashion industry. Reviews from customers can help businesses know if customers are happy and what they need. Using sentiment analysis, businesses can learn from these reviews. However, analyzing all the online feedback can be hard because there's so much of it and it's not organized. Some studies, like one by Yu & Bai (2021), have sorted through lots of clothing reviews to understand what customers care about. But it's still tricky because fashion words can be confusing, and feelings about things like fit and style are not easy to measure.

PROBLEM STATEMENT

- On e-commerce platforms, reviews for popular clothing products can reach tens of thousands, which puts the company at risk of information overload (Lu et al., 2023).
- Ratings may not accurately reflect the sentiment expressed in the associated review texts (Almansour et al., 2022).
- This lack of understanding makes it difficult for companies and designers to use user input to develop their products and make data-driven decisions.
- Companies also find manual data analysis to be expensive and time-consuming due to the overwhelming data from Internet reviews (Nawaz et al., 2021).

SIGNIFICANCE

- Sentiment analysis can help businesses understand how customers feel about their products, which can inform product development and improvement.
- By identifying positive and negative sentiments in reviews, businesses can adjust their marketing strategies to better appeal to their target audience.
- Sentiment analysis can help businesses stay on top of trends and preferences in the clothing industry, allowing them to tailor their products and marketing accordingly.
- The insights gleaned from sentiment analysis can help businesses make data-driven decisions and prioritize areas for improvement based on customer feedback.

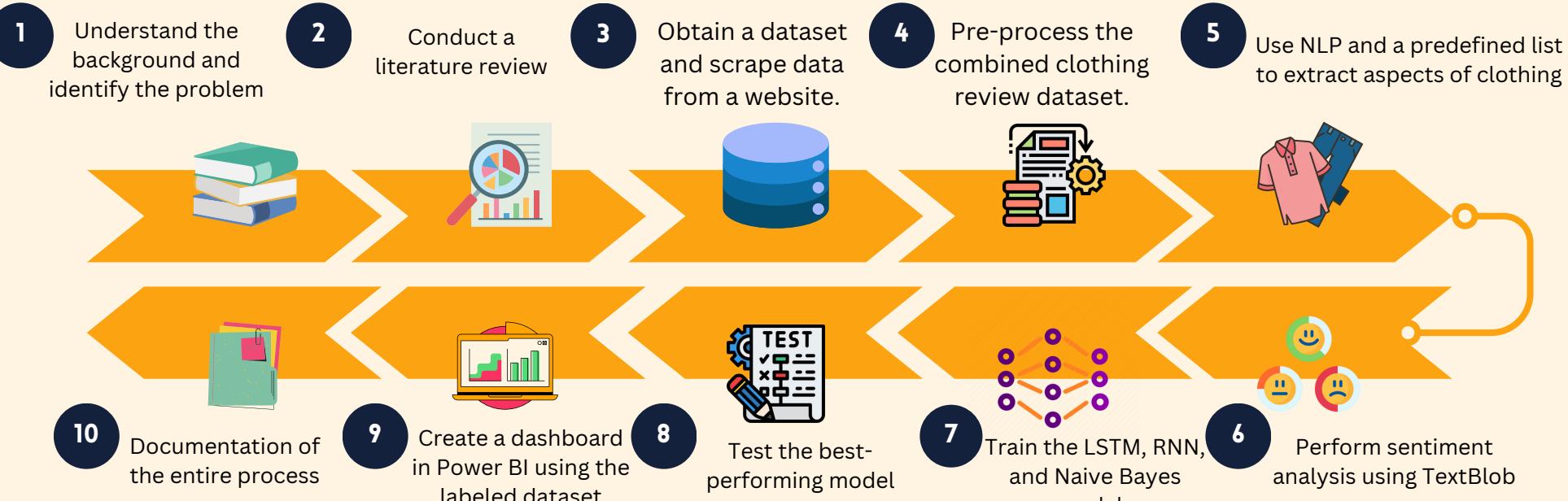
OBJECTIVES

- To identify the key aspects of clothing reviews.
- To apply Aspect-Based Sentiment Analysis for clothing reviews.
- To develop a dashboard for Aspect-based Sentiment Analysis of Clothing Reviews

SCOPE

- The sentiment analysis will analyze vast customer feedback on clothing products.
- The analysis will focus on reviews of top and bottom outfits.
- The sentiment analysis will cover nine key aspects of clothing.

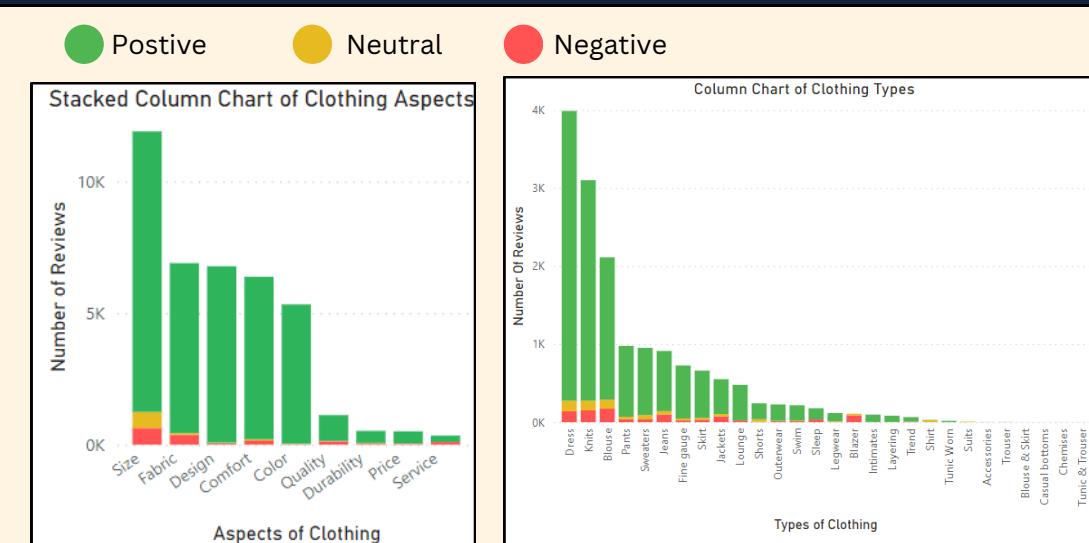
METHODOLOGY



RESULT

Model Training			
Matrix	Naïve Bayes	RNN	LSTM
Precision	0.63	0.96	0.95
Recall	0.36	0.97	0.94
F1-Score	0.36	0.96	0.95
Accuracy (%)	90.05%	99.15%	98.77%

Experiments					
Matrix	Experiment 1	Experiment 2	Experiment 3	Experiment 4	Experiment 5
Optimizer	Adamax	Adamax	Adamax	Adam	Adam
Epoch	10	20	30	10	20
Batch	32	64	128	32	64
Precision	0.92	0.93	0.93	0.96	0.97
Recall	0.94	0.95	0.95	0.97	0.98
F1-Score	0.93	0.94	0.94	0.96	0.98
Accuracy (%)	98.68%	98.71%	98.77%	99.15%	99.43%



DISCUSSION

- There is an issue in the aspect extraction process because some aspects were unsuccessfully taken out of the reviews.
- About 44.92% (12788) of the reviews were difficult to process because they were excessively short or did not include enough aspect mentions, but the other 55.08% (15678) could be handled well with ABSA methods.
- The models, which included Naive Bayes, Long Short-Term Memory (LSTM) networks, and Recurrent Neural Networks (RNN), regularly showed accuracy rates of over 90%.
- The imbalance between positive, negative, and neutral sentiment instances in the dataset might have affected the model's ability to generalize well across different sentiment classes.

CONCLUSION

In conclusion, the project successfully achieved its objectives, including identifying key aspects of clothing reviews, developing sentiment analysis models, and creating a user-friendly dashboard for visualizing sentiment analysis results.

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