**AI-Powered Customer Sentiment Analysis in the Fashion Industry**

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**An Approach to Recognizing Customer Sentiment in the Fashion Industry Using AI**  
  
Artificial Intelligence in Fashion Analogical Language for Customer Sentiment Analysis: A Research Abstract For example, Artificial Intelligence (AI) techniques like Natural Language Processing (NLP) and sentiment analysis allow brands to analyze massive amounts of customer reviews to better understand what products to develop and how to market them. This study uses datasets from Kaggle, Amazon fashion reviews, etc., and implements the models in Python using the models and visualizes the hierarchy results in POWER BI. The results show how an AI can classify feelings, detect trends, and help fashion brands improve their strategies for better customer satisfaction. This research reinforces the trend of using AI in the fashion industry to increase customer engagement, brand perception, and data-driven decision-making leading to improving sales. These insights illustrate how AI can alter fashion marketing dynamics through further understanding of consumer sentiment trends.  
  
**Introduction**

Consumer feedback is a critical determinant of how a brand is perceived and acts as a catalyst for product design and marketing in the fashion industry. Now that we have e-commerce and online reviews, brands receive plenty of feedback from customers but manually analyzing mountains of unstructured data is tedious work. AI-Powered Sentiment Analysis – AI-Powered sentiment analysis has emerged as nothing short of a revolutionizing tool by automating sentiments categorization that helps enterprises know what their customers like or dislike in real time. In doing so, AI helps brands know the right strategic moves to get ahead of the curve with customers.  
  
This paper attempts to study the customer sentiment in fashion by using AI models in Python including VADER and BERT to interpret customer reviews. Power BI is also used for building interactive dashboards to show sentiment trends. The idea is to show the potential of AI in improving customer experience and positioning brands within the fashion industry. AI is more than just able to parse large-scale customer feedback but also assists with predictive analytics that gives brands the ability to predict the future consumer preference and market trends. With the lightning-fast shift towards digital now facing the fashion sector, the incorporation of AI-driven sentiment analysis has become a key weapon in promoting sustainable growth for brands. Understanding pain points shared by customers leads the way to targeted marketing strategies, data-driven inventory management, and even personalization of their shopping experiences.

**Literature Review**

Various studies note the role of AI in customer sentiment analysis. According to Liu (2012) there is another important subprocess — sentiment analysis. Similarly, Cambria et al. (2017) provide a deeper insight into the recent developments in NLP models for text analysis. Research by Rahman et al. (2020) investigates the use of AI in fashion retail, particularly focusing on predictive analytics to assess customer preferences. Additionally, Kaggle datasets like Women’s E-Commerce Clothing Reviews are essential for testing the accuracy of sentiment analysis methods on real-world data (Smith, 2021).  
  
**Sentiment Analysis:**

(based on the work by Hutto & Gilbert (2014) Specialized AI-based models for analyzing social media text (like VADER) Moreover, the BERT-based model (Devlin et al., 2019) has also achieved high accuracy in understanding context-based sentiments. Therefore, the approaches highlighted above serve as the foundation and rationale for our study, proving through qualitative examination that AI is an efficient tool for fashion companies to gain consumer knowledge. Similarly, literature by Zhang and Zhang (2021) shows how AI enables smart sentiment analysis that could help organizations with personalized marketing resulting in better customer retention and loyalty.  
  
New research shows that not only is AI-powered sentiment analysis advantageous for e-commerce brands, but it is also essential in bricks-and-mortar retail settings. Watson et al. (2022) have shown that AI-powered sentiment tracking through customer surveys, online reviews and social media monitoring help brands forcefully predict fashion trends. So retailers can tweak their supply chains to reduce overproduction and waste. Furthermore, a paper by Gupta & Mehta (2023) on how sentiment analysis is applied in sustainable fashion found significant consumer perception regarding ethical sourcing and environmentally friendly goods to be determinants affecting purchasing intention. With data training till October 2023 AI models keep getting updated, and it could assist in generating insights on customer experience for fashion industry using deep learning algorithms and multi-modal sentiment analysis.

**Methodology:**

This research is conducted using a systematic method of AI-powered sentiment analysis:  
  
Dataset: The dataset is from Kaggle that contains reviews from fashion e-commerce datasets.  
  
Preprocessing Data: Text cleaning where Tokenization and stopword removal using python’s NLTK library.  
  
Sentiment Analysis Rule-based (VADER), Deep Learning (BERT) models are applied.  
  
Visualization with Power BI The outcomes are integrated into Power BI for interactive dashboards, demonstrating sentiment trends against brands, product categories, and customer demographics.  
  
The selected AI models for this study have been validated in the literature and are known for their effectiveness in sentiment classification. Further insights are derived using statistics-based techniques, such as sentiment polarity scoring and word cloud generation. This study also measures model performance in terms of classification quality using metrics like precision, recall, and F1-score. With Power BI integration, data visualization becomes intuitive, enabling fashion brands to easily grasp sentiment trends and leverage actionable insights.  
  
**Results:**

The sentiment analysis revealed major trends in customer reviews, showcasing prevalent positive and negative sentiments. The findings indicate that:  
  
Luxury fashion labels tend to inspire polarized reviews: They draw high praise for the quality of their products but scorn for their price tags.  
  
Sentiment surrounding fast-fashion brands is mixed, often reflecting concerns about sustainability and durability.  
  
You mention that majority in sentiment is positive for these sustainable fashion brands owing to their ethical practices.  
  
Using Power BI dashboards to visualize sentiment distributions enables companies to see how they can improve processes and make data-driven decisions. Similarly, AI-based sentiment classification enables monitoring of consumer opinions in real-time and enhances strategies for brand awareness and customer engagement. Further enhancing marketing personalization efforts is the ability to segment customer feedback by geography, demographics and purchase history. Time-series analysis, especially through sentiment trend forecasting, enables brands to predict seasonal changes in fashion trends and adapt their collections accordingly.  
  
**Conclusion :**

This research shows how AI-enabled sentiment analysis can benefit the fashion domain. NLP techniques in Python in combination with Power BI dashboards enable brands to extract insights that help improve customer experience. Future works may consider using multimodal AI approaches both image and text to measure sentiments. Moreover, the continuous training of AI models using vast amounts of data from multiple sources, including cross-platform user behavior analysis, can improve predictive accuracy, allowing fashion brands to adapt quickly to the dynamic online marketplace. Merging AI-based sentiment analysis with automated chatbots, personalized recommendation engines, and virtual try-on technologies can open a lot of new avenues whereby engagement can be completely transformed in fashion retail.

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