

Abstract

The digital technology revolution has transformed consumer shopping behavior, including in the fashion industry. H&M, as a global fashion retailer, faces challenges in understanding and adapting to rapidly changing consumer preferences. In this dynamic fashion industry, predicting hoodie sales performance has become increasingly complex due to these fast-evolving preferences. This study aims to identify the visual characteristics of H&M hoodies using CNN (Inception V3) and cluster the products based on specific features through clustering analysis. Hoodie image and sales data from 2018-2020, sourced from Kaggle.com, are used to analyze visual characteristics and cluster the products using K-means. Additionally, a Random Forest model is employed to analyze various variables affecting H&M hoodie sales profiling, including visual features extracted by CNN, along with cluster combinations, leaf parameters, and depth in the Random Forest. The experimental results indicate that the model performs relatively better than other K values, as indicated by the lowest MAPE of 12.66%, RMSE of 53.867, and MAE of 43.943. This study focuses on the relationship between the product's visual characteristics and sales data, without considering external factors such as marketing strategies or global fashion trends, aiming to develop an accurate sales profiling system for H&M.

Keywords: Fashion retail, Computer Vision, Random Forest, Sales Profiling, Machine learning in Fashion, Inception V3, Visual Feature Extraction