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An Analysis of Social Media Activity in Sustainable Apparel Brands: A Visual Data Mining Approach
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As global apparel companies strive to implement strategies to be more environmentally friendly and socially responsible, it has led many fashion brands to actively communicate information regarding the product development procedures of environmentally sustainable apparel and fair trade clothing products (Reiter & Kozar, 2016). The advent of social media such as Instagram has empowered fashion brands to capture consumers’ interest in specific trends and become one of the best ways to communicate with fashion consumers (Hutchinson, 2017). More and more young retailers born in the internet age have embraced strategies that focus social media efforts around a community dialogue (Hershman & Mills, 2017). Particularly, sustainable brands like Everlane have turned to Instagram comments to get direct customer feedback on business decisions like product launches, packaging design and sustainability activities (Milnes, 2016). Today’s fashion consumers speak pictures. They use Instagram to track the runways and make purchase decisions (Hutchinson, 2017). It’s important to understand how sustainable apparel brands utilize social media to conceptualize production design, engage with customers, and determine where advertising and content marketing resources should go.

Researchers have investigated the relationships among corporate communication, sustainability, and social media by reviewing companies’ annual reports and likes/followers on social media platforms (Reilly & Hynan, 2014). In the context of textile and apparel, Kim and Ko (2010) studied the effects of social media marketing on luxury fashion customer relationships (involving intimacy and trust) and purchase intention. However, most studies employed text analysis or survey methods, which neglect the influence of visual information on social media. With the emergence of Instagram in today’s fashion industry, pictures or colors posted by fashion companies may or may not represent well their brand identity and image. Based on color theory, which is a body of practical guidance to color mixing and the visual effects of a specific color combination (Agoston, 2013), this study aims to understand how sustainable brands utilize social media to deliver brand information and sustainability efforts through a visual data mining approach.

Three sustainable fashion brands were chosen for this study—Everlane, Patagonia, and Stella McCartney. From contemporary casual and outdoor brands to luxury brands, these three are well known for their sustainability practices and have relatively more followers and comments on Instagram than other similar brands (Pena, 2017). A system was established to scrape images, content and reviews regarding each brand from the official Cloud API of their own Instagram accounts. Specifically, all pictures posted during 2017 were extracted and inputted into the system. After cleaning all the related data, statistical analysis was conducted and finished in the cloud. A total of 320 pictures were crawled from Everlane, 300 from Patagonia, and 905 from...
Stella McCartney. According to color theory, color features include hue, saturation and luminosity value (HSV) and texture features include local binary pattern (LBP) and histogram of gradient (HOG) for each image that was extracted, analyzed and compared.

For color features, a K-means clustering algorithm was used to select five colors clusters of images. To validate the tendency of images for each brand, mean and standard deviation of HSV features and mean values of RGB channels were calculated for each brand. For Everlane, Patagonia, and Stella McCartney, values for Hue (Mean/Std) were 77/46, 58/47, and 82/46; values for Saturation (Mean/Std) were 32/40, 77/69, and 75/67; and values for Luminosity (Mean/Std) were 193/59, 169/67, and 164/73. It was concluded that Everlane prefers neutral colors with low saturation value but high luminosity value. This is consistent with Everlane’s vision to “build the world’s best high-quality basics” (Wylie, 2018). Most of their products are basic styles with neutral colors. Figure 1 shows the details of color features for Everlane using histograms to get the distribution of hue, saturation and luminosity.

For texture features, this study calculated the LBP and HOG feature vectors for each image and then averaged them to get the feature vector for each brand. To analyze the texture across three brands, the Pearson correlation of the feature vector was adopted. In addition, the histogram was demonstrated for each feature vector. With the high correlation of LBP feature vectors across three brands, it was concluded that each brand showed a similar texture in terms of visual information. Based on the histogram, high frequency was shown on the flat texture of the local information of three brands. In addition, it was found that the pictures of Everlane and Patagonia tend towards flat as the major texture with less edge and corner texture. However, pictures of Stella McCartney showed more flat and edge texture and less corner texture.

Based on the visual data analysis, the findings suggest that sustainable brands implement different social media strategies to communicate with apparel consumers. Everlane prefers neutral colors while Patagonia chooses more scenery pictures for its Instagram postings. Environmental impact is a big concern of Patagonia. Stella McCartney often includes celebrities in pictures of its products. To the best of our knowledge, this study is among the first research done that focuses on visual data mining in the realm of sustainability and fashion. Future research may explore consumers’ responses to this visual information. In addition, it would be interesting to discover how social media can be used to promote new collections by comparing social media pictures with pictures of actual products.


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