



## The Effect of Sustainable Fashion Brands' Posts on Customers' Emotions in Social Media

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**Introduction:** More and more fashion brands today have devoted attention to sustainability issues and adopted sustainability strategies to balance the environmental, social and business needs. These brands also actively convey sustainability related information to consumers and to remind them that sustainably produced clothing is an ethical purchasing choice. Many brands have added social media as an important outlet for communication about sustainability. Social media differs from traditional media in that it allows for interactive experiences between brands and consumers, which makes social media one of the best ways to capture consumers' interests in specific trends, thus leading to efficient communications (Reilly & Hynan, 2014). It is important to understand how sustainable apparel brands utilize social media to advertise their product and service, engage with consumers, and to find where social media marketing for sustainable brands should go. However, there are limited studies that utilizes the brand-generated-content and user-generated-content, to analyze how fashion brands communicate in social media and how their potential customers' respond to brands' posts. By analyzing both visual information and textual information, this study aims to investigate the impact of color and text features of brands' posts on customers' response, including their emotions and emphasis topics in social media marketing.

For the purpose of this study, color theory and semantic frame theory were used. Color theory is a body of practical guidance to color mixing and the visual effects of a specific color combination (Agoston, 2013). According to color theory, HSV - hue, saturation and luminosity (brightness) defines a color. Different colors represent different brand images and could arouse different emotions. Color studies have been done in so many fields such as architecture and environmental design (Caivano, 2006), apparel product design (Deng, Hui, & Hutchinson, 2010), while few was in social media images. If the main color of a brand's images is consistent with the brand identity, customers accept the information conveyed by these images more easily. In this study, the visual information of brands images is extracted and analyzed using color theory to show their association with brands sustainability effort. In addition, semantic frame theory was applied to investigate the textual content from brands' captions and consumers' comments. Frame semantics is a theory of linguistic meaning developed by Fillmore (1982). Frame semantics, a research program in empirical semantics that emphasizes the continuities between language and experience, provides a framework for presenting the results of that research (Petrucci, 1996). Frames are structured around a set of semantic roles that are called frame elements, corresponding to participants in the scene. In the text interaction between brand and public on social media, the frame elements are brand, product, event and public. It is associated with a set of lexical units that profile different frame elements.

**Research method:** Given the importance of Instagram in today’s fashion industry, we chose three Instagram accounts of sustainable fashion brands for this study - Everlane, Patagonia, and Stella McCartney. From contemporary casual and outdoor brands to luxury brands, these three brands are well known for their sustainability practices and have relatively more followers and comments on Instagram than other similar brands. A system was established to scrape images, captions and comments regarding each brand from the official Cloud application program interface (API) of their own Instagram accounts. Specifically, all images posted during 2017 were extracted and input into the system. The color analysis was conducted by Python. A K-means clustering algorithm was used to select the dominant color from five color clusters of each image. The HSV features of each dominant color was extracted too. To validate the tendency of images for each brand, mean and standard deviation of the main HSV features were calculated for each brand. The distributions of HSV features of each brand were plotted and compared to illustrate different characteristics of visual information.

For text features, all characters in captions and comments were transformed to lowercase characters. All numbers and punctuation were removed. Then all sentences were broken up into words. All words were stemmed to reduce the influence of variety forms of the same meaning. The first 120 highest-frequency words were extracted and drawn in to a word cloud by R programming. Sentiment analysis was conducted in Python, using TextBlob which bundles a lexicon of adjectives that occur frequently in product reviews and annotated with sentiment polarity scores. Word clouds of “positive” and “negative” comments from each brand was drawn to analyze the specific positive and negative emotions, and what is concerned about by Instagram users in their positive and negative comments, respectively.

**Findings:** Color analysis results reveal that images brands chose for social media posts are consistent with their values and visions. The color clusters of Everlane’s images are almost all neutral colors. The color clusters of Patagonia’s images are mainly white, dark blue and bright colors, based on the scenery. Stella McCartney’s images have variety colors showing different life styles of people with Stella’s product, as well as shocking landfills,



Figure 1: Word clouds of Everlane INS Captions



Figure 2: Word Clouds of Positive and Negative Comments of Everlane

Table 1 Descriptive Statistics of the Color Features.

| Color features          | Everlane    | Patagonia   | Stella McCartney |
|-------------------------|-------------|-------------|------------------|
| Hue (mean / std)        | 154 / 93    | 116 / 94    | 164 / 92         |
| Saturation (mean / std) | 0.13 / 0.16 | 0.30 / 0.27 | 0.29 / 0.26      |
| Luminosity (mean / std) | 0.76 / 0.23 | 0.66 / 0.26 | 0.64 / 0.28      |
| Major color             | 174,178,184 | 140,140,135 | 122,129,141      |
| Minor color             | 148,151,157 | 131,130,127 | 117,125,141      |

Table 2. Attitude Classification of Comments

|           | Positive Number | Negative Number | Neural Number | Total  |
|-----------|-----------------|-----------------|---------------|--------|
| Everlane  | 8,995           | 1,022           | 14,038        | 24,055 |
| Patagonia | 14,123          | 2,383           | 25,213        | 41,719 |
| Stella M  | 26,651          | 2,022           | 46,288        | 74,961 |

beautiful scenic and animals’ figures. Table 1 shows the descriptive statistics of the color features of each

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brand. For text feature of caption, results show that three brands focus on conveying different topics and values. For example, Everlane's word cloud shows that "human" is the core value of the brand. They aim to provide everyday look and focus on denim and cashmere products a lot. They improve the supply chain transparency of price to attract more customers. Figure 1 shows the word cloud example of Everlane. In addition, sentiment analysis demonstrates that most reviews for these three brands are neutral. Most people left questions about the product pictures or even just @ someone. Some of them expressed strong feeling in their reviews, most of which were positive. Stella McCarthy's Instagram had the least negative reviews proportion, while Patagonia received the most negative reviews in 2017. The attitude classification of reviews was shown in Table 2. Word clouds of "positive" and "negative" comments from each brand was shown in figure 2 (Blue – positive; Red - negative). By adopting a data mining approach, this study helps fashion brands have a comprehensive view of the information flow on fashion brand social media, and illustrate new insights and managerial implications from the impact of brands posts' information on consumers' emotions.

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