Analyzing Twitter and Instagram Social Networks to Trace the Consumer Opinion Regarding Transparency in the Apparel Supply Chain

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The globalization of the apparel supply-chain has made it very challenging for firms to track and manage all the sustainable business practices in their supplier locations (Doorey, 2011). Also, the growth of social media has made the public more aware regarding business practices of companies today (Bhaduri & Ha-Brookshire, 2011). Hence, recent incidents of poor and unsafe working conditions and enhanced communication technology have together led to a heightened demand for corporate transparency (Bhaduri & Ha-Brookshire, 2011). Social media helps brands and advocacy groups to communicate their sustainability efforts and organize campaigns to promote transparency. While many researchers have studied the cases of brands using social media to disclose their suppliers' names (Bhaduri & Ha-Brookshire, 2011; Doorey, 2011), the research on cases of sustainability campaigns on social media is limited. In particular, the large amount of user-generated content created on social media has not been utilized to its full potential by the research community in the apparel industry context (Chae, 2015). This study aims to utilize the large-scale user-generated data on Twitter and Instagram to investigate (1) the overall public opinions of social media users regarding apparel supply-chain sustainability in terms of transparency; (2) the communities that are present in the networks discussing apparel supply-chain transparency; and (3) the key themes discussed in these communities.

The study is grounded in Granovetter's (1973) theory of the Strength of Weak Ties (SWT) and Milgram's (1967) Small World Theory of the social network theory (SNT). According to SNT, a social network represents a social structure containing a set of actors (nodes) and a set of dyadic ties (edges) identifying social relationships between these actors (Wasserman & Faust, 1994). The Small World Theory explains the close-knit structure of a social network where the messages can reach any node in the network within an average of six hops (Travers & Milgram, 1969). Similarly, the SWT theory explains how a weak bridging tie between nodes of different social networks helps in the diffusion of new ideas and novel information among networks (Wasserman & Faust, 1994). Therefore, this theory can explain how a single idea flows among various communities and gets enriched by public opinion and feedback in sustainability campaigns, hence, providing a foundation to study a social network structure and information flow on social media.

This study uses social network analysis to investigate the pattern of discussions regarding apparel supply-chain transparency on Twitter and Instagram using the #whomademyclothes campaign as the research context. A total of 17,030 Instagram posts and 4,530 tweets with #whomademyclothes were crawled using Python between April 24 and April 30, 2017, the week of the #whomademyclothes campaign. A total of 25,010 hashtags were extracted and 57,512 edges between those hashtags were constructed based on hashtag co-occurrence in an Instagram post. Similarly, 1,576 hashtags were extracted, and 2,653 edges were constructed in a tweet.

These network data were analyzed using Force Atlas 2 and Open Ord algorithms on Gephi software.
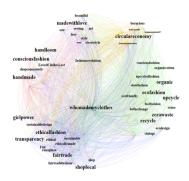

Figure 1: Instagram Network with #whomademyclothes

Figure 1 shows the #whomademyclothes network on Instagram. That hashtag was the central node in this network. Several nodes emerged such as #ethical, #zerowaste, #fairtradefashion, #transparency, #girlpower, #shoplocal, and so on. These nodes indicate that the users of Instagram associate this campaign with both working conditions and environmental support in the apparel supply-chain. Distinct hashtag communities present within the network were classified using different colors. The color green with the hashtag #ecofashion and the blue community with hashtag #ethicalfashion as the central topic emerged as the two largest communities in the network. Other smaller communities with hashtags such as #handloom and #madewithlove showing community support also emerged.

The Twitter network shown in Figure 2 was similar to the Instagram network in terms of central hashtags. The hashtags #Upcycling, #transparency, and #FairFashion emerged as the most influential nodes within the network. Interestingly, the Twitter network had many nodes in different languages and linked to various other sustainability campaigns suggesting a wider spread. Most communities were similar to those found on Instagram. However, the Twitter network also demonstrated a community in pink talking about transparency and social entrepreneurs with hashtags such as #SocEnt, #corporateworld, #GoTransparent, and so on.

Figure 2: Twitter Network with #whomademyclothes

Both the Instagram and Twitter networks exhibited high interest in environmental issues, working conditions and community support in the apparel supply chain, which can be explained by the Moral Responsibility Framework of Corporate Sustainability (MRCS) (Jung & Ha-Brookshire, 2017), despite the intended theme of the campaign to promote transparency specifically in terms of working conditions. However, some inconsistencies were found regarding the importance of these communities in the network suggesting that while survey methods hold significance in measuring user intention, the reaction-based user-generated data on social media can be useful to measure users' true behavior. Hence, the findings will contribute to the usage of social media data in apparel-industry-related research. Also, while the Twitter network was dominated by knowledge-based messages, the Instagram network had emotion driven messages. The findings will, therefore, help brands and NGOs to understand social networking and information flow on social media, and thus, strategize how to target their audience in an effective manner to make the maximum impact. Furthermore, the findings can provide insight to businesses regarding what today's customers really want, and hence, help the businesses and policy makers understand the need of the hour and work towards it, further improving their overall performance**.**

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