

## Visualizing Social Roles and Structural Signatures of the Cosmetic Brands on the Sephora's' Twitter

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### Introduction: Cosmetic Brands on the Sephora Platform

The NPD Group reported that the beauty landscape is increasingly being shaped by direct-to-consumers, experiential retail, and a whole host of indie brands. In the beauty market with rapidly changing products and distribution models, the prestige cosmetic sector has relied on insights and solutions to address the emerging trends, needs, and behaviors of the next generation of beauty consumers (<https://www.npd.com/wps/portal/npd/us/industry-expertise/beauty/>). Sephora's platform can be of value by its unique, open-sell environment with an ever-increasing assortment of products from carefully curated brands, featuring indie brands, emerging favorites, trusted classics Sephora's own PB brands. Indeed, the platform of Sephora can address the assorted brands' network features on its omnichannel.

This study aims at understanding inter-and intra- networks between consumers and brands by examining the structure of communication networks within the Sephora Twitter community. Specifically, we visualized the four Indie-cosmetic brands' networks focusing on the influencer's social role and four brand community clusters' structural signature. Using the social network analysis (SNA), we explored: (1) the communication patterns and topics of four cosmetic brands' tweets; (2) the structure of conversation and clusters; and (3) the characteristics of influential consumers who are actively sharing the opinion and ideas.

### Literature Review: Social Roles and Structural Signatures on Twitter Networks

Social roles can be examined in comparison to patterns of behavior and information structures of relationships among people. Structural signature indicates notable characteristics that describe types of networks as occupants of a social role (Faust & Skvoretz, 2002). A Twitter network driven by influentials, who either intentionally or unintentionally significantly impact the network, has individual structural relationships in persuading other users. We suggest that these impactful relationships may generate "structural signatures," and "social roles" can be identified through the behavioral and structural representations of the Twitter network (Welser et al. 2007).

Developing methods to recognize and define social roles on the Twitter network is particularly significant. Because social media data became more available to the public and researchers, and frequently contains several aspects that can be used diversely and simultaneously, including marketing, cybersecurity, and platform management (Liu et al. 2019). Recently, Social Network Analysis (SNA) by employing NodeXL have become valuable analytical tools in helping discover structural signatures and social roles.

## Data Analysis and Findings

Data collection and initial analysis: Network data was collected using the import function for '#Sephora' from Twitter Search Network using the NodeXL program. The function of Calculate Graph Metrics was performed to gather information on key indices, including Degree, Page Rank, and Centrality, which are used to investigate the quantity of vertices in social networks. The original dataset of the initial network contained 10905 vertices (i.e., consumers or Twitter account) and 3891 edges (i.e., relationships among consumers and brands).

*Clustering & Graph-layout Algorithms:* The multi-scale layout algorithm of NodeXL was applied and identified the 16 sub-clusters within the network. The clusters reflect "Brand Community Clusters," in which a popular topic may develop multiple smaller sub-groups. These groups often form a few hubs, each with its audience, influencers, and information sources (Smith et al., 2014).

*Visualizing by Group-In-a-Box (GIB) Layout:* The GIB using the Treemap Box layout was applied to salient four brand clusters (i.e., Benefit Beauty, Fenty Beauty, Fresh Beauty, and Too Faced) to identify individual vertices as connectors (Influentials) and each brand's structural significance. The results revealed that Twitter users have connected with the Benefit Beauty brand through @BenefitBeauty, @Fenty Beauty, @Fresh Beauty, and @Too Faced respectfully. The high PageRank of the Twitter user and the weighted intergroup edges illustrated these network structures.

## Conclusions

This study signifies the SNA approach's competence as a novel analytical tool to explore social roles and structural signatures among consumers and brands in social media. Comparing the four brands' networks in Sephora's Twitter platform, we recognize the outstanding large-size vertices with top Page Rank are influentials. They disseminate their relationships in the Twitter network with information and opinions by employing their structural significance as follow:

- All cosmetic brands had indirect connections with other cosmetic brands, which meant the brands shared their networks on the Sephora's Twitter. However, they all played an essential role in each other's social networks because there were many third-party Twitter users as bridges to make them connect.
- Four cosmetic brands had direct relationships with Sephora because their products are sold in Sephora's omnichannel.
- The cosmetic brand itself was the influencers with a high Page Rank in its Twitter network. The brands had opportunities to use other brands' influence to promote their products or brand in Sephora's omnichannel. Specifically, both Benefit Beauty and Too Faced were prominent at using other brands' influentials to expand their social network.
- Upon analyzing the influentials profiles, three primary users bridging across different cosmetic brands were the individual fashion bloggers, the cosmetic brands' Twitter accounts, and the editors who work for fashion or cosmetic magazines. Using these three influential groups can be of use for promoting cosmetic brands.

Practically, the cosmetic brands can increase brand-consumers resonances by empowering the social roles of influential and utilizing structure signatures of networks in a social media, Twitter. As cosmetic brands and beauty retailers understand 'what's next,' more cosmetic brands enhance their interactions with consumers and compatible Indi-brands through effective network in-store, social media in the omnichannel environment.

### References

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