

Investigating Socio-cultural Behavior of Users Reflected in Different Social Channels on K-pop

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ABSTRACT

In this paper we investigated the socio-cultural behavior of users reflected in the two different social media channels, YouTube and Twitter. We conducted the comparative analysis of the networks generated from the two channels. The relationship we set for each network is the relatedness on YouTube and the co-links on Twitter. From the results, we revealed that the social media influenced the distinct socio-cultural behaviors of their users. Specifically, Twitter network better showed the actual consumption of contents in the field of the k-pop culture than YouTube. From this study, we contributed to offer a novel approach for exploring the socio-cultural behavior of users on the social media.

Categories and Subject Descriptors

H.3.5 [Information Storage and Retrieval]: Online Information Services; J.4 [Arts and Humanities]: Performing arts

General Terms

Measurement, Experimentation

Keywords

Socio-cultural behavior; YouTube related video network; Twitter co-link video network; network analysis; YouTube; Twitter

1. INTRODUCTION

As the number of users increases and related technology has advanced, social media become strongly connected to the daily lives of people. Several researchers have concentrated on studying the impact of collaborative information discovery and sharing which social media promote [1]. For example, Russo and Peacock pointed out that social media enabled people to have interactive cultural experiences [2]. Similarly, Potts et al. found that the consumption of cultural goods is greatly influenced by social media [3]. Based on their studies, we could assume that social media would reflect the socio-cultural behavior of people.

This study is to investigate the socio-cultural behavior of users reflected in two popular social media, YouTube and Twitter. Several studies revealed that those two function differently which results in the creation of distinct User-Generated Contents (UGCs) [4][5], however, those studies do not focus on socio-cultural behaviors of users. Particularly, we limited our study to

specific cultural product, k-pop related to videos. We conducted the comparative analysis of the video networks generated from the two different channels. We did different approach that no studies tried, and suggest that socio-cultural behavior of users on the two social media significantly differ. Specific methods are described in the following section.

2. METHODOLOGY

Figure 1 represents the general overview of the methodology used in this study.

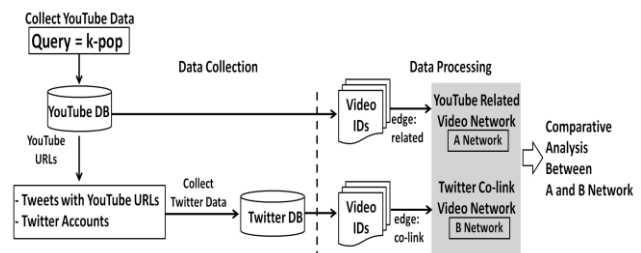


Figure 1: The overview of the methodology

We used k-pop related queries such as k-pop, kpop, korean pop, SM Entertainment, YG Entertainment, JYP Entertainment in conducting searches on YouTube. The last three queries indicate three representative k-pop entertainment companies which many of representative k-pop singers belong to. Those three queries were separately selected to cover k-pop related videos which didn't have any specific metadata that mentioned the word "k-pop". After the search was processed, we collected 3,004 video data in YouTube database, and 45 of 3,004 videos were then removed as they were found to be private or deleted.

For Twitter data, we collected tweets which contained any URL of these 2,959 seed videos along with Twitter account names by web crawling. We ended up collecting only 834 among 2,959 seed videos, and these are the base for constructing the Twitter co-link network. We then collected all the videos mentioned by those Twitter accounts. Finally, co-link pairs of videos were created if one of them was in the seed video list and both of them were mentioned by the same Twitter account.

Similarly, we gained all related videos of 834 seed videos suggested by YouTube using YouTube Data Application Programming Interface (API). We then sorted out the videos only to 2,959 seed videos previously retrieved with k-pop related search terms. Figure 2 describes how we create pairs for each network.

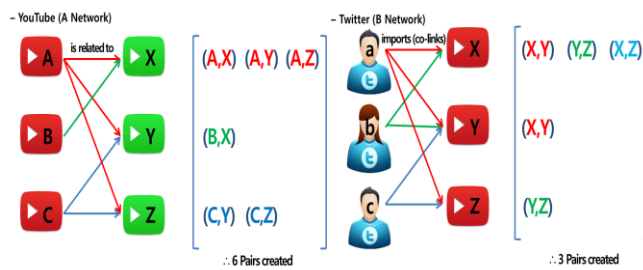


Figure 2: Pair making algorithm

With this process, we finally constructed each network, namely YouTube related video network and Twitter co-link video network. The node of these networks is video ID related to K-pop, and the edge is the frequency how many times each video pair was occurred. As Freeman's *degree centrality* was adopted for this study, we calculated each node's degree centrality scores [6].

To investigate whether there are significant differences between two networks, we carried out two-tailed independent sample *t*-test. We also analyzed the overall network and more closely, top 50 ranked nodes on the network.

3. RESULTS

3.1 Statistical analysis

Mean degree scores for the YouTube related video network and the Twitter co-link video network significantly differ ($p < 0.05$), implying that two networks exhibit different features on the whole.

Additionally, from the analysis on the top 50 nodes of the two networks, we identified three distinct points. First, total view counts of highly ranked videos in the Twitter network were relatively lower than those of the YouTube network. They have statistically significant difference ($p < 0.05$) with mean difference close to 70 million views and *p* value of nearly 0. Second, the number of unique categories of Twitter network's top videos is slightly more than those of YouTube network's videos, with their numbers of 5 and 3 respectively. With regard to unique accounts who upload the videos, high centrality videos in Twitter network were uploaded by more users. To be specific, 23 unique upload accounts were found in Twitter network and only 15 in YouTube network. Additionally, the total number of videos uploaded by those unique accounts has considerably higher mean value with greater variance in Twitter network compared to YouTube network. Their significant difference was again proved by *t*-test ($p < 0.05$). The high rank videos in the two networks, however, are not significantly different when it comes to the number of users who subscribe these unique accounts ($p > 0.05$).

3.2 Content analysis

The content analysis was conducted only with the top 50 nodes. Briefly, People & Blogs, Travel & Events, and Shows categories solely appear only in Twitter network while Music and Entertainment are common categories in both networks. We also analyzed titles of videos, and we observed that top videos in Twitter network cover more various cultural contents such as

concert, dance, interview, and audition while most of those appeared in the YouTube network are merely music videos.

4. DISCUSSION AND CONCLUSION

We have observed the socio-cultural behavior reflected in two social media channels, YouTube and Twitter. The results drawn from Twitter were quite distinct from those from YouTube. To summarize the results, the videos linked by Twitter users are not related to popularity index such as view counts; they are rather influenced by diverse users, and varied categories. It is important to note that the core videos with high centrality scores in the Twitter network are not limited to music contents but other cultural contents in general. This can be associated with showing the actual trend of the cultural consumption on k-pop. The consumption of the k-pop culture is not only limited to music itself but cultures regarding k-pop in general. The revenue structure of entertainment companies in Korea supports this phenomenon. According to the study Korea Creative Contents Agency did, most of JYP Entertainment company's profits were generated by royalty fee (85.9%) by branding its singers, while album sales only accounted for 0.4% in the first quarter of the year 2013 [7]. In this regard, the Twitter co-link video network better reflect the real cultural consumption trend compared to the YouTube related video network.

The study validated the proposed approach is suitable for exploring the socio-cultural behavior drawn from the two different social media channels. Although it has some limitations in that the analysis was constrained to k-pop related videos, this approach can be applicable to study other topics and fields. Additionally, the comparison of socio-cultural behaviors reflected in other social media can be conducted in the following study.

5. REFERENCES

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