Abstract

The online social networking sites (SNSs), which have rocketed from technique engaging niche users into a dominant online communication platform engaging millions of users, may change the pattern of online interpersonal communication. The study found that dyadic characteristics and structural factors largely determined the behavior of friendship formation, rather than characteristics of users.

The data of the current study are collected from one of the largest SNS platforms in China, covering the first two years (2006-07) since its inception, during which time most users of the SNS were college students. The dataset records an anonymized ID, demographic characteristics, a list of bidirectional friends and the time of the friendship formation. In total, 10 million users and 200 million bidirectional ties are involved.

Using polynomial logistic regression to fit the time path of friendship formation for each individual user, the study finds that the increase in the number of friends for each user typically follows a Logistic function with time, indicating that the growth of friends starts slowly at the beginning, speeds up rapidly after reaching a critical point, and then tapers off finally. More importantly, the trajectories appear uniformly, if not identically, across individuals who joined the social network at quite different points in time, suggesting a high degree of regularity in user behavior when forming friendship.

This study further examines the growth trajectory of friendship of the entire SNS, and compares the resulting of global-level trajectory with the individual-level trajectories. Surprisingly, there emerges a strong self-similarity in the growth of friendship between the
individual level and the global level, which reinforces the regularity of social friendship formation behavior.

Although users show a similar time path of adding friends, there are substantial differences across individuals in the sheer size of their friendship networks. As the second research objective, the study examines the effects of three sets of factors, including characteristics of network structure, characteristics of dyadic friendship, and characteristics of individual users, on the likelihood of the friendship formation.

Of the factors under study, Balance Structure and the Cohesiveness of User's Ego Network (which involves the user as the “ego-center” and only directly-related friends as other members of the network) are the two most dominant factors influencing the tie formation. Contrary to the prevailing theory of “Preferential Attachment” in the previous literature, friendship formation is positively related to Homophily of Degree (i.e., number of friends), which means that people make friends with similar (rather than famous) others. In addition, the Popularity of the user and his/her Experience with using the SNS has a negative effect on friendship formation, i.e., users with higher popularity or longer SNS using history are less likely to add new friends. Likewise, Homophily of Experience has also a negative effect on friendship formation in that users become increasingly inclined to establish friendship with those with different duration of experience with the SNS (i.e., veteran users are more likely to add new comers whereas new comers more likely to team up with veterans), which suggests that friendship formation is a dynamic process throughout which users change their friendship strategies over time. Finally, individual characteristics, such as Sex and level of online Self-
Disclosure, do not have any significant effect on the tie formation, which in fact strengthens the importance of structural factors reported above.

The findings of structural effects on friendship formation sheds some lights on social media marketing in the sense that online marketers could choose marketing information initiators according to users network positions, rather than users SNS usage frequency or motivation. In addition, this study also has some practical implications on SNS operators. Considering the strategy of retaining user loyalty, SNS operators should focused more on the friendship maintenance, such as encouraging the creation of user generated contents and developing tools to facilitate information sharing, rather than simply encouraging friendship formation since most users will stop adding new friends after they reach their saturation point.