

Talk of the Network: A Complex Systems Look at the Underlying Process of Word-of-Mouth

Jacob Goldenberg,

Barak Libai

Eitan Muller

Abstract

Though word-of-mouth (w-o-m) communications is a pervasive and intriguing phenomenon, little is known on its underlying process of personal communications. Moreover as marketers are getting more interested in harnessing the power of w-o-m, for e-business and other net related activities, the effects of the different communications types on macro level marketing is becoming critical. In particular we are interested in the breakdown of the personal communication between closer and stronger communications that are within an individual's own personal group (strong ties) and weaker and less personal communications that an individual makes with a wide set of other acquaintances and colleagues (weak ties).

We use a technique borrowed from Complex Systems Analysis called *stochastic cellular automata* in order to generate data and analyze the results so that answers to our main research issues could be ascertained. The following summarizes the impact of strong and weak ties on the speed of acceptance of a new product:

- The influence of weak ties is at least as strong as the influence of strong ties. Despite the relative inferiority of the weak tie parameter in the model's assumptions, their effect approximates or exceeds that of strong ties, in all stages of the product life cycle.
- External marketing efforts (e.g., advertising) are effective. However, beyond a relatively early stage of the growth cycle of the new product, their efficacy quickly diminishes and strong and weak ties become the main forces propelling growth. The results clearly indicate that information dissemination is dominated by both weak and strong w-o-m, rather than by advertising.
- The effect of strong ties diminishes as personal network size decreases. Market attributes were also found to mediate the effects of weak and strong ties. When personal networks are small, weak ties were found to have a stronger impact on information dissemination than strong ties.