Social Contagion and Technology Adoption: A Study in Healthcare Professionals

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Abstract
This study applies social network analysis approach to studying technology adoption behavior by healthcare professionals. The empirical study was conducted in an ambulatory, primary care clinic where users use a clinical decision support system to treat patients. Strong evidence of social contagion is found in the structural equivalence of friendship network, particularly within the segment between residents and their attending physicians. None of the direct communication networks is found to have significant impact on usage.

Introduction
As social agents, human being’s beliefs and behavior are sensitive to the beliefs and behavior of their significant others. When an actor (ego) adapts his or her beliefs or behavior to those of other actors’ (alter), social influence occurs, which is often referred to as “social contagion”. According to social influence theories, social contagion is transmitted through direct communication among tied actors (cohesion), or comparison between occupants of similar social positions (structural equivalence), or both. While a large body of social network research has shown evidence of social influence on doctors’ adoption of new medical innovations (e.g., Coleman et al, 1966 [1]), this approach has not been used to examine clinicians’ adoption behavior of healthcare information systems. This study is therefore conducted to assess the impact of social contagion on end users’ level of adoption, as recorded as actual usage in the information system studied.

Method
The empirical study was conducted in an ambulatory, primary care clinic where internal medicine residents use a clinical decision support system to treat patients. A survey instrument was developed assessing three network structures in the clinic that may be relevant to technology adoption: 1) network based on consultation of patient-care related matters (professional network); 2) network based on personal proximity (friendship network); and 3) network based on perceived influence from others on a user's intention to use the system (perceived influence network).

Preliminary Results
Structural equivalence of the friendship network, particularly within the segment between residents and attending physicians, is a strong predictor of the resident users’ recorded usage levels. None of the direct communication networks is found to have significant impact on usage.

Several individual factors are also found to impact usage: computer optimism and perceived ease of use of the system are positively associated with usage, and computer knowledge is negatively associated with usage. These findings are consistent with the results of a previous study reported in [2] and [3].

Conclusions
Resident users’ adoption decisions do not seem to be driven by direct communications (either reflected in the cohesion networks or as perceived influence on ego’s intention to use the system). Instead, resident users who occupy similar social positions tend to demonstrate similar adoption behavior. Perceived influence, solicited via survey questions, may not reveal actual influence processes. Social network approach, by avoiding asking direct questions such as “who influenced you”, can be a useful tool to study social influence in technology diffusion.

References