Evolution of Social Interactions over Time and Space: Evidence from New Customers in the Online Grocery Industry

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Descriptive Summary

The proposed research examines the effect of the increased frequency of interaction and the proliferation of varied forms of interaction facilitated by the Internet on individual decision making. In particular, individuals are more apt to be influenced by the opinions, experiences, preferences, and behavioral cues of others, such that many decisions are increasingly socially determined. Unsurprisingly, the effect of social interactions on individual decision making has therefore received increased attention in the latest decade. I aim to contribute to this literature.

In particular, I develop a conceptual and statistical framework for analyzing the evolution of social interaction as evidenced by: (1) Proximity Effects – Individuals in contiguous areas engaging in like behaviors due to conservational or observational learning, and (2) Similarity Effects – Physically separated individuals engaging in like behaviors due to shared characteristics (and underlying preferences). The framework is used to analyze the driving forces of social interactions in explaining spatio-temporal diffusion of new customers at Netgrocer, an online grocery retailer operating continually in the contiguous United States since May 1997.[1]

In many instances, a lack of information about individuals' direct interactions has led scholars to use geographical proximity as a proxy for interaction (e.g., Bell and Song 2006). The rationale behind doing so is that the closer individuals are to one another, the more likely they are to interact, and hence, the more likely their decisions are to influence or be influenced by others. My proposed approach

[1] It is important to note that the research focuses on physical proximity and characteristic similarity as drivers of a common *behavior* which in the application is placement of an initial order at the online retailer Netgrocer. That is, I do not measure the extent to which groups actually interact through conversations (as say in Godes and Mayzlin 2004). This is the difference between *explicit interaction* – where say two characteristically similar individuals located in physically distant regions discuss the movie Lord of the Rings in a chat room – and *implicit interaction* where these two individuals end up going to the theater to watch the movie at a similar time.

measures and controls for such effects. In addition, as the Internet has dramatically reduced communication costs and accelerated various avenues with which an individual can communicate with others, individuals can now "agglomerate" with other individuals that share preferences or interests, regardless of the physical locations of the interacting parties (see Choi and Bell 2006).

Preliminary analysis of Netgrocer data suggests the following. First, new online purchases are more likely to arise from communities which are similar to those that define the existing customer pool. This effect remains significant even after controlling for physical proximity to preceding adopters, important across-region environmental differences, and the availability of Internet service. This finding supports the emergent view that initial implicit social interaction is facilitated by preference similarity, i.e., the ability of shared tastes or interests to be consummated or observed in virtual communities that may be physically distant. Second, once new triers emerge, subsequent trial behaviors appear to be governed by physical proximity which suggests the presence of local neighborhood effects in decision making.

Given the preliminary indications of the existence of the preference similarity and physical proximity effects, I plan to examine, in detail, the temporal evolution of these two separate drivers of correlated decision making. Thus, in the empirical analysis, I intend to analyze the dynamic nature of social interactions in explaining spatio-temporal diffusion of new customers at Netgrocer. The overall goal of the empirical model is to examine evidence for the following conjecture with regard to similarity effects and proximity effects: while socio-demographic similarity independent of physical proximity drives very early trials, the effect gradually dwindles with time. In contrast, physical proximity to the initial triers becomes the dominant influence in generating the succeeding trials. I also plan to explore the choice-theoretic and practical implications of the empirical observations.

References

[1] Bell, David R. and Sangyoung Song (2006), "Neighborhood Effects and Trial on the Internet: Evidence from Online Grocery Retailing," Working Paper, The Wharton School, University of Pennsylvania.

[2] Choi, Jeonghye and David R. Bell (2006), "Agglomeration of physically distant types: Similarity among users of an Internet retailing service," Working Paper, The Wharton School, University of Pennsylvania.

[3] Godes, David and Dina Mayzlin (2004), "Using online conversations to study word-of-mouth communication." Marketing Science, 23 (4), 545-560.

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