Research Statement

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Research Overview

My research focuses on social networks and digital strategy. The revolution in communication technologies has fundamentally reshaped how individuals connect with one another and how firms engage with customers. The increased availability of big networked data and computing power allows researchers to analyze human interactions at population scale. My work aims to rethink the role of social networks in economics and organizations, leveraging the phenomena, data and research tools enabled by new technologies.

My current work examines the causal relationships among products, social influence and network-embedded human behavior. I have been conducting a series of studies on various aspects of social advertising. Social advertising places social cues (e.g., likes and comments) in ads, utilizing the power of social influence (the effects of social cues in ads) to encourage ad engagement. I have been collaborating with a world-leading social networking app, WeChat, for large-scale randomized field experiments on its social ads. In the experiment, the presence and the number of social cues were randomly assigned among 114 million ad-user pairs (more than 55 million subjects and across 99 ads in 25 product categories). Integrating the experimental evidence and the data of individuals, products, ads and network structures, my studies address the incentives, magnitude, contagion patterns and viral factors (i.e., characteristics of products, brands, ad images, behaviors and individuals) of social influence in social advertising and product adoptions.

In what follows I will first discuss the three essays[1] in my Ph.D. thesis and then describe my plans for future research.

Current Research

The first study seeks to understand how social influence enhances the effectiveness of social ads through the effects of social cues (i.e., likes) on both public (i.e., liking) and private (i.e., clicking) ad responses[2][1]. I find that, on average, showing the first social cue significantly enhances users' liking and clicking propensity, but showing the additional social cues only increases users' tendency to like but does not affect their tendency to click an ad.

Although users will always herd in publicly responding to (i.e., liking) an ad, I find the evidence of rational herding in users' private engagement with (i.e., clicking) an ad. It indicates that users infer the trustworthiness of social cues (i.e., likes) by observing the process of generating (i.e., liking) them. The first like, generated independent of social conformity, always exhibits significantly positive effects on ad clicking. The unpopularity of brands enables the herding momentum in clicking, as users infer the superior trustworthiness of social cues associated with small brands to justify the herd. Social influence in social advertising may fail if users attribute the herd of social cues to observational factors, such as social conformity and popularity of brands.

The second study aims to identify the heterogeneous effects of social advertising, measured by the effects of social cues on ad engagement, and to investigate how product characteristics impact social advertising effectiveness [2]. We find that the effects of the social cues on ad engagement are heterogeneous across different products (e.g., a BMW 325 automobile or a Kitchen-Aid blender), product categories (e.g., fashion products or electronics products) and theoretically motivated product types (e.g., search/experience goods or status/non-status goods).

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[1] In these studies, I focused exclusively on the effect of likes, using experimental groups that hid all friends' comments on ads. Comments can vary widely in their content. Using likes as the only social cues allows me to cleanly estimate the effects of friends' endorsements. The data from the groups that show comments in ads are used for other ongoing and future research.

[2] Unlike traditional display ads, social ads allow users to publicly respond to ads. Public responses are socially identifiable valuations regarding products and are broadcast with ads in the form of social cues in networks. Private responses, such as clicking ads, reflect a user's private action in relation to ads and are closely correlated with ad engagement. However, private responses are usually not revealed to others.

More specifically, status goods, which symbolize consumers' social status and rely on normative social influence (i.e., social conformity), displayed stronger social advertising effectiveness than non-status goods. Social ads for experience goods, which have more product uncertainties and rely more on informational social influence (i.e., social learning) in product decisions, do not perform any better or worse than their theoretical counterpart search goods. The status and expertise of the user displayed in the ad also moderated these effects differently across different products. As a result, products are not created equal in terms of their diffusion through social networks, and normative social influence is more critical than informational social influence for behavioral contagion in social ads. Marketers should differentiate their viral marketing strategies, and platform managers should price social ads differently for different products.

The third study's goal is to develop a machine learning model that identifies user-friend pairs where social cues (i.e., friends' likes) have enhanced effects on users' ad engagement, using high-dimensional data [3]. The impact of social cues in social ads is jointly determined by the characteristics of influencers (influence), those influenced (susceptibility) and their relationships.

Our model searches for the user-friend pairs exhibiting enhanced effects of social cues. Such pairs are characterized by the interpretable rules constructed from the demographic, behavioral and network characteristics of users, their friends shown in ads and the tie strength and social embeddedness between the users and the friends. Our results on ad engagements for different product categories demonstrate that the enhanced effects of social cues associated with the identified pairs can be much larger than that on the entire population. As a result, targeting the contagious user-friend pairs is an effective strategy to improve social ads' effectiveness.

Future Research

I am furthering my study of social influence in social advertising using the data from the current experiment and leveraging the findings and theories from my current studies to design new viral marketing strategies. First, I am investigating how other factors, such as characteristics of brands (e.g., premium/value and new/old) and ad images (e.g., composition and color), affect product virality through social ads. Second, I am examining the interaction effects between different social cues (e.g., likes and comments) in social ads. The preliminary results suggest that showing both likes and comments in ads is more effective than showing only likes or only comments for increasing clicks; however, showing more likes even decreases users' propensity to comment, and vice versa. Finally, I am implementing another randomized field experiment on WeChat social ads to investigate whether viral advertising strategy is especially effective for viral products; this will test the heterogeneous effects of social ads from a practical perspective. More specifically, I examine 1) whether further effectiveness of social ads can be gained by initially targeting the users who are likely to endorse an ad and then displaying these user-endorsed ads to the susceptible users, and 2) whether this viral strategy is more effective for potentially viral products, such as food, clothing and status goods.

I will continue my research on understanding the social structure in economic activities and designing the digital strategies enabled by social networking technologies and digital platforms. My current work addresses how products should be advertised in social networking sites. However, it is still unclear whether social commerce (the ability to make product purchases within social networking sites) is a feasible business strategy, under what conditions the relationship-based business models, such as peer-to-peer selling, are more effective, and whether the effectiveness is heterogeneous across seller-buyer relationships, network structures and products.

References

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