New product adoption in social networks: Why direction matters

Oliver Hinz [a,*], Christian Schulze [b], Carsten Takac [c]

[a] Technische Universität Darmstadt, Hochschulstr 1, 64289 Darmstadt, Germany
[b] Frankfurt School of Finance & Management, Sonnemannstr 9-11, 60314 Frankfurt am Main, Germany
[c] Goethe-University of Frankfurt, Grueneburgplatz 1, 60323 Frankfurt am Main, Germany

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ABSTRACT

Marketing managers and researchers generally agree that analyzing data from social networks and using them to influence consumers' purchase decisions are useful strategies. However, not all social network data may identify the most influential customers. This empirical study of more than 300 students reveals the low explanatory power of friendship networks (e.g., Facebook) and undirected-advice networks (e.g., LinkedIn). Only directed-advice networks (e.g., Google +) clearly identify influential consumers. In addition, the results challenge conventional wisdom that firms should target advisers assuming that they have the strongest influence on new product adoption. This study contradicts this common assumption and reveals that structural equivalence drives product adoption more than cohesion because advisees' adoption pressures advisers to purchase the product as well. Finally, the study shows the value of social network data beyond the traditional ego-centric psychographic metrics, such as innovativeness or opinion leadership.

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1. Introduction

Understanding new product adoption behavior is critical for both firms and researchers striving to explain and influence consumers' decisions. Because influencing consumers through traditional advertising seems to become less effective (Trusov, Bucklin, & Pauwels, 2009; Van den Bulte & Wuyts, 2007), firms continuously seek new ways to promote products and influence consumers' adoption decisions. According to sociological research, economic behavior embeds into the social environment (Granovetter, 1985). Social contagion affects prospective customers, and some persons wield more influence over purchase decisions than others (Godes & Mayzlin, 2009; Goldenberg, Han, Lehmann, & Hong, 2009; Iyengar, Van den Bulte, & Valente, 2011). Thus, more firms attempt to address individual consumers directly (Algesheimer, Borle, Dholakia, & Singh, 2010) and base targeting strategies on consumers' social influence (Hinz, Skiera, Barrot, & Becker, 2011). For example, one tactic triggers and influences consumer-to-consumer (C2C) communication (Hinz & Spann, 2008; Libai et al., 2010). This approach seems promising due to social network platforms' increasing popularity (e.g., Facebook, LinkedIn, or Google +). These platforms offer consumers ample opportunities for brand- and product-related discussions, increasing C2C communication.

Recent research indicates that new customers influenced by C2C communication are more valuable to firms than customers acquired by other means (Schmitt, Skiera, & Van den Bulte, 2011; Trusov et al., 2009; Villanueva, Yoo, & Hanssens, 2008). Furthermore, greater consumer activity on social network sites enables companies to gather detailed information about users' social interactions and social relationships. Knowing who is connected to whom is instrumental to identify and target influential consumers and to increase new product adoption (Bampo, Ewing, Mather, Stewart, & Wallace, 2008; Hinz et al., 2011).

Marketing practitioners and researchers seem to agree that social network data helps facilitate targeted marketing and influence consumers' new product adoption behavior. The presumed marketing potential of structural data from social network platforms such as Facebook and LinkedIn is visible in these firms' high market valuations. Does information about the structure of consumers' social networks from these platforms provide sufficient information to identify the customers who strongly influence other consumers' purchase decisions? This study addresses the fundamental research question: What types of social networks enable firms to identify and target influential consumers?

To determine social network data's suitability to identify influential customers, the present research adopts two perspectives. First, this study examines the explanatory power of undirected networks for consumer product adoption and whether targeting individual consumers using information from undirected networks offers a promising strategy for firms. In undirected networks, relationships are mutual (e.g., Facebook, LinkedIn), without any observable relationship hierarchy (Scott, 2000). Conversely, directed networks allow consumers to name another contact without requiring reciprocation. Because directed networks (e.g., Google +) contain additional information about who talks and who listens, they might permit

* Corresponding author. Tel.: +49 6151 167 5220; fax: +49 6151 167 2220.
E-mail addresses: hinz@wi.tu-darmstadt.de (O. Hinz), email@christian-schulze.de (C. Schulze), carsten@takac.de (C. Takac).

better identification of influential consumers and might help firms target their marketing (Hinz et al., 2011).

Second, this study investigates social contagion's effect and direction. Social networks' information seeking and learning models suggest that not all social contacts are equal; consumers decide whom to consult in specific situations (Borgatti & Cross, 2003). Consumer relationships that revolve around a specific topic of common interest (e.g., cars, electronics, or fashion) may provide greater impact on purchase decisions in that domain than friendships do. This study compares the usefulness of friendship networks (Facebook) and advice networks, which either focus on a specific topic (e.g., professional relationships in LinkedIn) or permit various topical sub-networks (e.g., circles in Google +), to identify the most influential consumers.

In addition to this comparison, this study investigates which consumers firms should target. Some research challenges long-accepted truths about the importance of advisers or opinion leaders in product adoption processes (Van den Bulte & Stremersch, 2004; Watts & Dodds, 2007), suggesting that social contagion is better explained by status considerations than by social learning under uncertainty. Theory offers two competing explanations on how two consumers (e.g., adviser vs. advisee) influence each other's product adoption decisions. First, cohesion describes the popular view that an adviser adopting a product likely exerts influence on an advisee who has not yet adopted the product. Second, structural equivalence suggests that an advisee adopting a product exerts social pressure on an adviser based on competitive concerns who has not yet adopted the product, because the adviser fears losing his or her social status as adviser (Burt, 1987). Research remains uncertain about which contagion effect dominates (see Bowler, Dahlstrom, Seevers, & Skinner, 2011). If cohesion is dominant, firms should target well connected advisers and disseminate information and influence many others to adopt as well. If social pressure arising from structural equivalence is dominant, firms should target advisees instead, because these consumers' early adoption behavior exerts pressure on well-connected advisers to adopt to preserve a certain social status (Bowler et al., 2011). This study investigates whether the effect of cohesion is stronger than the effect of structural equivalence, or in other words, whether targeting advisers is indeed more effective than targeting advisees.

Finally, this study analyzes the value of complete social network information available from social network platforms compared to the value of ego-centric psychographic concepts (e.g., opinion leadership and innovativeness) (Katz & Lazarsfeld, 1955; Rogers, 1962, 2003). From a theoretical perspective, the comparison sheds light on the question whether social network information is a substitute for or a complement to traditional ego-centric concepts.

This article offers both theoretical and practical perspectives. From a theoretical perspective, systematically analyzing the explanatory power of two types of social networks (friendship vs. adviser–advisee) with different degrees of information (undirected vs. directed) yields important implications regarding the usefulness of different social networks for social network analysis. As the empirical study shows, not all social networks collect the same structural data and differ significantly in their explanatory power for targeted marketing. From a theory perspective, the article investigates the strength of competing explanations for social contagion: cohesion and structural equivalence. Again, the empirical study's results run counter to widely held beliefs about the processes underlying social influence among consumers. Managerially, the article offers several important insights. Practitioners attempting to influence consumers' new product adoption behavior based on social network data must carefully choose their social network data—available data might not be suitable for targeted marketing purposes. At the same time, the findings highlight the potential benefit of social network analysis over the more traditional use of psychographic concepts. Finally, the empirical results offer new and surprising recommendations to marketing managers wanting to target consumers with the greatest influence, challenging the common belief that targeting advisers is most effective.

2. Explaining new product adoption through social contagion and individual psychographic concepts

2.1. Social contagion

New product adoption is an imitation process (Mahajan & Muller, 1979; Rogers & Shoemaker, 1971). This theory applies to human behavior in general, which depends strongly on the social environment. For new product adoption, the social environment and social contacts play important roles by providing and validating information about the advantages and disadvantages of the product. Social contagion affects prospective adopters, and some people wield more influence over adoption decisions than others (Godes & Mayzlin, 2009; Goldenberg et al., 2009; Iyengar et al., 2011). As Borgatti and Cross (2003) suggest, the ability to access and value another person's knowledge is a key factor in social information gathering and, ultimately, social learning. Especially when mass media are omnipresent, obtaining information is less problematic than finding trustworthy information, and the challenge is to filter overwhelming data (Coleman, Katz, & Menzel, 1966).

For example, in a social network, friendship patterns, advice, communication, and support exist among social system members (Scott, 2000). Consumers base decisions on social cues (e.g., behavior of others) (Festinger, Schachter, & Back, 1950). Social networks generate trust, reduce uncertainty, and mitigate the information ambiguity (Valente, 1996). Social contagion arises when proximate people use one another to manage the uncertainty of prospective adoption (Granovetter, 1985). What causes people to behave similarly? In addition to homophily, sociology and network theory offer two plausible explanations: cohesion and structural equivalence (Burt, 1987).

"Cohesion" refers to socialization between adopter A and potential adopter P. As social interaction increases between A and P, A's influence more likely triggers P's adoption. When A and P discuss an open question, such as an adoption decision, both parties align their evaluations of the associated costs and benefits through strong communication (Fischer, 1978). *Structural equivalence* reflects competition mechanisms instead, so A and P need not engage in direct social interaction. Their competing social positions in overlapping social networks drive the adoption decision (Burt, 1987). For example, competition for a certain social position increases the social pressure on P to adopt and avoid losing social position to A. Thus, structural equivalence and cohesion provide two (potentially overlapping) concepts to explain social influence on new product adoption decisions through the bandwagon pressure of social contagion (Abrahamson & Rosenkopf, 1997; Sailer, 1978).

2.2. Psychographic concepts

Without information about a social networks' structure, researchers commonly use psychographic concepts, such as opinion leadership (e.g., Flynn, Goldsmith, & Eastman, 1994). Managers and researchers consider opinion leadership important to new product adoption decisions (Rogers, 1962, 2003). Opinion leadership plays a central role in consumer behavior models and affects successful new product strategies (Flynn et al., 1994). The expansive notion describes the influence of some people on others' adoption decisions (Katz & Lazarsfeld, 1955). Opinion leaders typically have greater exposure to mass media, engage in more social experiences, and enjoy higher socio-economic status. As a reference point for opinion seekers, leaders spread positive or negative information about a new product (Rogers, 1962, 2003). Recent studies show a low correlation between the related but distinct concepts of opinion leadership and social connectivity (Iyengar et al., 2011; Molitor, Hinz, & Wegmann, 2011).

Psychographics also encapsulate consumers' independence with respect to judgments and desire to seek new product information.