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Trigger Strategies for Standard Diffusion in Interorganizational Networks:
A Conceptual Model and Simulation

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ABSTRACT

When establishing a new technological standard, multiple actors often have to build coalitions to overcome the inertia of the emergent collaboration network and to mobilize decisive levels of support. The authors suggest that the emergence of a standard in a networked field can be strategically influenced by focusing only on a subset of all actors. The study defined the choice of a specific set of standard-initializing organizations as the trigger strategy. A conceptual model was developed from interorganizational collaboration as a network comprised of a set of heterogeneous, interconnected nodes, qualified by their group membership and size. The authors employed network simulations identifying the value of different trigger strategies. Data on a network of airline collaboration was used to illustrate the model. Under most conditions considered, the study found a strong triggering potential of interrelated core cliques in comparison to other trigger strategies. The results suggest that this strategy should receive more attention in the future.

KEYWORDS

Core Cliques, Multiple Actors, Network Simulation, Standard Diffusion, Trigger Strategies

INTRODUCTION

Multiple actors are often involved in collective action when establishing a new standard[1] (Hargrave and van de Ven, 2006). Collective action means that different actors come together to influence a standardization process in such a way that the result is in their interest. This is often the only option in interorganizational networks where hierarchical intervention is not possible (Powell, 1990; Provan, Fish, & Sydow, 2007). Collective action thus forms an intermediate level between the decisions of individual actors, in our study, organizations, which can or cannot adopt the standard, and the overall systemic level, in our study, the interorganizational network, at which the diffusion of the standard is reflected. When collective action stands at the beginning of a standardization process, it can be an initial impulse or trigger that sets a self-reinforcing process in motion (Arthur, 1989; Meyer & Schubert, 2007; Sydow, Windeler, Müller-Seitz, & Lange, 2012). For interorganizational networks, we conceive this process as a contagion process in which the new standard will spread in the network characterized by existing partnerships between organizations. Due to the heterogeneity of the actors and the diversity of their interests, it must be assumed that the spread of the standard from one partner to another has different thresholds.

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Against this background, it is important to understand how collective action can be made as efficient as possible, so that a small or powerful group can help the standard to achieve scaling on a broad scale. Although a broad literature from economics and organizational theory deals with collective action problems, the strategic influencing of standardization processes is not yet fully understood. There is consensus that joint action may allow to "mobilize a collective despite resistance and inertia" (Garud and Karnøe 2001: 6). Furthermore, a large body of literature also stresses the importance of networks in the pursuit of collaborative interests (Gulati, Nohria, & Zaheer, 2000; Powell, 1990; Powell, Koput, & Smith-Doerr, 1996; Provan et al., 2007). Examples are strategic alliances (Dyer, Kale, & Singh, 2004; Reuer, 2004), partnerships for marketing (Gerlach, Cleophas, & Kliewer, 2013; Hu, Caldentey, & Vulcano, 2013), or new product development (Pavlou & El Sawy, 2011), as well as other forms of horizontal or vertical collaboration (Sydow, Windeler, Schubert, & Möllering, 2012). These interorganizational network structures not only open up but also foreclose viable development paths on the network level (Burger & Sydow, 2014; Schmidt & Braun, 2015). In particular, existing network structures are "pipes and prisms" (Podolny, 2001). They act as conduits to disseminate ideas and innovations (Galaskiewicz & Wasserman, 1989), but at the same time they reflect existing dependencies (Sundararaja, Provost, Oestreicher-Singer, & Aral, 2014). Thus, new standards must overcome the inertia and resistance of existing relationships so that collective activities can eventually succeed.

The importance of collective action in standard diffusion processes is frequently commented on but the existing knowledge rarely forms a consistent basis for behavioral orientation at the level of concrete strategies. The previous literature on standards, and generally innovation, has begun to acknowledge the influence of social networks on diffusion processes (Cohen, Hsu, & Dahlin, 2016; Geroski, 2000; Greve, 2009; Rogers, 2003), yet it says relatively little about the specific constellations that help a standard scale. The literature on networks, including the literature on interorganizational networks, has similarly produced rich contextual accounts of network processes, yet it also provides no definitive answers to the question of effective collective action. It lacks knowledge about how targeted interventions, as intentional projects to influence change and achieve desirable results, should be designed (Valente, 2012). Thus, the extant literature tends to provide only limited guidance for decision makers (e.g., standardization organizations or meta-organizations) in networked settings and requires further specification and elaboration.

The purpose of this paper is to examine how constellations of multiple actors in a network should be composed in order to mobilize decisive levels of support for a new standard. Our starting point is an understanding of standard diffusion processes as social contagion processes (Aral, Muchnik, & Sundararajan, 2009; Centola, 2015; Centola & Macy, 2007; Gibbons, 2004; Watts & Dodds, 2007; Watts & Strogatz, 1998). We conceptualize collaboration networks as patterns of interaction among organizations and perform simulations. Organizations are represented by interconnected nodes of certain size and group membership. The links denote dependencies influencing subsequent decision-making with respect to a standard's adoption. We then simulate contagion processes running through the network. To do so, we perform targeted interventions in which we collectively tip multiple actors at once. We form various coalitions, each consisting of a group of actors and examine their effectiveness as a trigger strategy. The results suggest that the optimal trigger strategy is not necessarily a focus on a certain group, e.g. members of a certain alliance, or size. Under most conditions considered, we find that focusing on core cliques within the network can be useful to mobilize decisive levels of support for a new standard.

CONCEPTUAL FOUNDATIONS

We start by turning to the notion of standard diffusion in interorganizational networks and discuss how this can be understood as a contagion process. Then, we conceptualize different strategies that multiple actors may employ to trigger a standard diffusion process mobilizing decisive levels of support.

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