Strategic decision making in business relationships: A dyadic agent-based simulation approach

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ABSTRACT

This study employs agent-based simulation to model strategic decision making in business relationships, examining the influence of two important strategy drivers in business relationships (performance and power) on relationship success (relationship survival and performance). The study offers insights into the complex and evolutionary interaction and feedback effects between networking strategy choice, relationship performance and power. Findings show that although certain strategies may be desirable for firms to manage their business relationships, they are not necessarily as successful in all situations. Results indicate that a trade-off exists between relationship context and performance which needs to be considered in strategic networking decisions. Further, the study shows that too many strategy changes cause relationships to become unstable and thus negatively affect performance. The authors refer to this phenomenon as strategy volatility — the rate at which actors change their networking strategies within relationships. This phenomenon arises when too many variables influence firms' decision making and thus cause firms to frequently change their strategy. Although strategy volatility has a relationship safeguarding effect in the short term, this effect diminishes over time.

1. Introduction

Understanding how to effectively manage in business relationships has been a central topic for scholars in the area of business marketing (Ford, Gadde, Håkansson, & Snehota, 2003a). An important aspect of this issue relates to the way managers make decisions and choose certain strategies to affect business relationships, and in particular their position in the surrounding business network (Baraldi, Brennan, Harrison, Tunisini, & Zolkiewski, 2007; Gadde, Huemer, & Håkansson, 2003; Harrison, Holmen, & Pedersen, 2010). Such strategizing issues are often linked to how actors understand the particular network in which they are embedded (Holmen & Pedersen, 2003). To grasp such aspects, research on sense-making in networks (e.g. using the concept of network pictures) has recently aimed at gaining insights into how managers perceive their surrounding business network and thereby underpins their understanding of their strategic options for managing in relationships as well as choices in complex systems (Ford, Gadde, Håkansson, & Snehota, 2003b; Henneberg, Mouzas, & Naudé, 2006; Ramos & Ford, 2011). According to Henneberg et al. (2006, p. 409), "the notion of network pictures refers to the different understanding that players have of the network. It is based on their subjective, idiosyncratic sense-making with regard to the main constituting characteristics of the network in which their company is operating. These perceived network pictures form the backbone of managers' understanding of relationships, interactions and interdependencies, and therefore constitute an important component of their individual decision-making processes." A recent study by Corsaro, Ramos, Henneberg, and Naudé (2011) empirically established the connection between managerial cognition in terms of managers' perceptions of their surrounding business network, and their subsequent propensity for engaging in specific strategic decision making about how to affect business relationships. The authors found significant associations between certain network picture characteristics (i.e. different expressions of power, dynamics, broadness, and indirectness of the subjective network pictures) and preferred networking strategies (understood as activities affecting a company's network position; Ford et al., 2003a).

However, while this research has been essential in linking research on subjective perceptions of actors on the one hand, and managerial strategic decision making on the other, no strategic decision with respect to an organization's business relationships is likely to be made in isolation of the current and anticipated relationship performance (Hambrick & Snow, 1977). In fact, most of the time (potential) performance in itself is a primary driver of strategizing decisions. Furthermore, such performance outcomes are invariably dependent on the relationship partner's actions, and so any consideration of

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strategic decision making needs to be seen in a dyadic context (Henneberg, Mouzas, & Naudé, 2010). It is therefore important to expand research on network pictures in a strategy context by incorporating other well-established drivers of strategy decision making, e.g. performance, and to include an interactive, or dyadic perspective. Furthermore, according to Ford et al. (2003a, 2003b), networking (i.e. choosing and implementing a networking strategy), network pictures, and network outcomes (i.e. performance) form an important conceptually interlinked triangle for firms to do business and navigate in relationships and networks.

Therefore, the objective of our research is to bring these three important elements together and provide a better understanding of the interrelationships between managers' perceptions of their surrounding business networks, their networking choices as an outcome of their strategic decision making, and relationship outcomes, particularly performance. In order to capture these interrelationships between the constructs, we employ an agent-based dyadic simulation as it allows us to combine previous findings about the focal constructs, and to systematically experiment and study the interaction effects among them. Hence, simulation methods are particularly useful for researchers in exploring and developing theories (Davis, Eisenhardt, & Bingham, 2007). Although agent-based simulation is a research technique that has received increasing attention in the area of organization, strategy and management research (e.g., Aggarwal, Siggelkow, & Singh, 2011; Davis et al., 2007; Fang, Lee, & Schilling, 2010; Lazer & Friedman, 2007; Levinthal, 1997; March, 1991; Miller, Zhao, & Calantone, 2006; Repenning, 2002; Rivkin, 2000; Siggelkow & Rivkin, 2006; Zott, 2003), it is still in its infancy with respect to studying business relationships and networks.

For the purpose of our study we develop a parsimonious evolutionary simulation model of a business relationship that focuses on network pictures with varying degrees of perceived power of the focal company within the embedding network, as well as the networking strategy framework outlined in Hoffmann (2007). We derive certain performance and power outcomes through the simulation. The strategy framework by Hoffmann builds on the seminal work of March (1991) in organizational learning and conceptualizes fundamental approaches which firms can adopt to interact in relationships, and thus manage in their networks. We furthermore single out power as our focal network picture variable due to its importance in affecting business relationships as well as networks (Anderson & Narus, 1984; Anderson & Weitz, 1989; Håkansson & Ford, 2002; Levinthal & March, 1993; Palmatier, Dant, Grewal, & Evans, 2006). We test and contrast three simulation models to initially establish the validity of our computational approach, and then to study step by step the interaction effects between the focal constructs as well as the sensitivity of the model to key construct changes.

Our dyadic simulation approach contributes to the business marketing and strategy literature in several ways. First, we introduce an agent-based simulation to the study of business relationships and networks, and thereby demonstrate how simulation methods can be utilized to gain insights into phenomena which are difficult to study with traditional empirical research methods. Second, we contrast different networking strategies and demonstrate that their success is context dependent, hence providing an extension of existing research on strategic decision making in business relationships. Finally, we demonstrate the effects of performance and power- driven managerial decision making on relationship success (i.e. relationship continuation, relationship performance), thereby revealing essential interaction effects between these two constructs that suggest that strategic relational decisions, especially the change of an existing strategy, need to be well justified, as volatility in the strategic direction (i.e. changing networking choices too often over time) causes relationships to become unstable, hence negatively affecting relationship performance.

The article is structured as follows: first, strategic decisions within relationships and business networks from an industrial network approach (INA) are discussed. This is followed by an overview of the conceptual framework and a parsimonious review of the network picture and networking strategy research. The agent-based simulation and computational design are introduced, followed by an overview of the results and the main findings. Finally, the conclusions, implications, and limitations of our study are discussed.

2. Conceptual framework

2.1. Towards a network perspective of strategy

Traditionally, organizational performance, particularly how to sustain and improve such performance, has been at the center of strategy research (Barney, 2002). Essential to this view is the notion that companies are in constant competition with other organizations for market share and profits (Barney, 2002; Porter, 1980). According to Porter (1980), competitive pressure originates not only from firms' direct competitors, but also from their suppliers, customers, substitutes and potential entrants. Therefore, strategy is primarily concerned with understanding how organizations are able to achieve a competitive advantage (Barney, 2002) and to establish a defendable position within their industry (Porter, 1980). From this perspective, according to Gadde et al. (2003), strategy is about exerting power over business partners, while remaining as independent as possible. However, this view on strategy has been challenged by scholars working in the INA who emphasize that organizations are embedded in networks of exchange relationships (Ford et al., 2003a; Gulati, Nohria, & Zaheer, 2000). Gadde et al. (2003, p. 358) argue that "in an industrial network perspective interdependence and coevolution are important characters, and the competitive aspect of strategy becomes less important." They suggest shifting away from a narrow and atomistic focus of strategy on competition and performance, to strategic decisions in networks of business relationships in which a company is embedded, and with which it becomes interdependent (Harrison & Prenkert, 2009; Harrison et al., 2010). Such business networks include a range of different business partners that are of strategic importance for organizations — namely suppliers, customers, strategic alliance partners, agencies, contractors, competitors, etc. From this perspective, how firms initiate, maintain and develop business relationships and mobilize business networks in which they are embedded is central to their strategy (Gadde et al., 2003; Ritter, Wilkinson, & Johnston, 2004), as well as the actions/reaction of their interaction partners (Ford & Mouzas, 2010; Håkansson & Ford, 2002). While the traditional economic perspective on strategy remains important, it is crucial to widen the scope of strategy to incorporate the relational dimensions as proposed by the INA (Ford et al., 2003a).

2.2. Managing in networks — a conceptual guide

The model proposed by Ford et al. (2003b) about 'managing in networks' can be understood as an attempt to integrate essential relational elements in the context of strategy as part of business relationships. Thus, according to Ford and colleagues, network pictures (understood as the subjective understanding of the network, held by actors), networking (understood as interactions of a firm with network partners), and network outcomes (understood as the outcomes of the networking decisions by relational partners) are all mutually interlinked (Ford et al., 2003b). Networking, for example, addresses both the management of existing relationships and the formation of new business relationships, and thereby affects network outcomes as well as influences the position of a firm within its business network (and thereby also the position of other firms) (Ford & Mouzas, 2010). On the other hand, the way managers perceive their network position, and how well strategic networking expectations transform into network outcomes, affects future networking decisions (Henneberg et al., 2006). While Ford et al. (2003b) differentiate among three levels of outcomes, namely the level of the actor, the