10.5465/AMBPP.2017.41

RELATIONAL DRIVERS OF COLLABORATIVE SUCCESS

BRANDON OFEM
College of Business
University of Missouri-St. Louis
1 University Boulevard
St. Louis, MO 63121

BINDU ARYA
University of Missouri-St. Louis

STEPHEN P. BORGATTI
University of Kentucky

INTRODUCTION

Public, private and not-for-profit organizations engage in vertical and horizontal interorganizational relations (IORs) for a variety of reasons, such as acquiring resources, solving complex problems, and pursuing common goals (Cropper, Ebers, Huxham, & Ring, 2008). Two prominent perspectives for examining IORs include resource dependence theory (RDT) (see Drees & Heugens, 2013 for a review) and social network theory (SNT) (see Zaheer, Gözübüyük, & Milanov, 2010 for a review). While both perspectives recognize resource imbalances between organizations as a source of power, they emphasize different causes of those resource imbalances. RDT is largely predicated on atomistic assumptions of *market power*, derived from differences in the control of highly demanded traditional resources. SNT maintains that the broader social structure within a given exchange system can serve as a basis of *social power*, based on the control of network resources. Even though power can be based on relative dependencies concerning the control and importance of traditional *and* network resources (Arya & Lin, 2007; Casciaro & Piskorski, 2005; Gulati, 2007; Hillman, Withers, & Collins, 2009), sparse amount of scholarly work in the existing literature has relied on both RDT and SNT to understand IORs (see Xia et al. 2016 for an exception). Further, much of the literature has focused on IOR *formation* rather than outcomes of ongoing exchanges. Hence, our study seeks to answer the following research question: *How do network characteristics impact interdependence, and in turn, the perceived collaborative success of exchange partners?*

To answer this question, we integrate tenets of RDT and SNT to better understand how structural features of IORs in a collaboration network impact interdependence, a core construct of RDT, to subsequently influence outcomes of ongoing exchanges. To test our theory, we analyze a relational dataset of 270 IORs between 98 nonprofit economic development organizations (EDOs) in the economically distressed rural region of eastern Kentucky. The social structures formed from the collective actions of individual EDOs govern the tension between resource dependence and potential resource misappropriation (Lee, Feiock, & Lee, 2012). We theorize that those structures provide differential network resources to exchange partners that impact interdependence, and in turn, are likely to influence their collaborative success.

THEORETICAL BACKGROUND

RDT is a useful perspective for the examination of collaborative success since all IORs involve interdependence between partners. Prior studies utilizing RDT view interdependence as detrimental to weaker actors due to their unequal bargaining power in distributive exchanges (Provan, Beyer & Kruytbosch, 1980). Although this work has its roots in Emerson's (1962) classic work on power relations, it rarely accounted for joint dependence between partners. Addressing this oversight in RDT research, Casciaro and Piskorski (2005) identify two distinct dimensions, namely, *mutual dependence* (i.e. sum of dependencies between two organizations) and *dependence asymmetry* (i.e. power difference between two organizations). They, along with Gulati and Sytch (2007), point out that exchange relationships can independently vary along both dimensions and researchers should consider them simultaneously when examining IORs and their outcomes. Doing so can

10.5465/AMBPP.2017.41

offer theoretical traction in explaining collaboration outcomes, since each dimension is likely to have a distinct effect on relationship dynamics with unique antecedents.

From the network perspective, the aggregate pattern of IORs in an exchange system form larger structures of connectivity. Some structures and positions are more advantageous due to the greater network resources, control, and/or capacity for cooperative action that they provide (Borgatti, Mehra, Brass, & Labianca, 2009; Burt, 2005). Much of social network theorizing is based on the *flow model*, in which linkages serve as pipes through which resources, information, and/or influence flow, or the *coordination model*, in which ties serve as instruments for cooperative action (Borgatti & Halgin, 2011). Networks, through mechanisms derived from both the flow and coordination models, are likely to directly impact interdependence between exchange partners. While the coordination model has a rich tradition in social network research for explaining power differences between actors, RDT has mostly, albeit implicitly, adopted the flow model with its emphasis on securing critical resources. This represents a significant gap in the RDT literature since interdependence and its associated collaboration outcomes are inherently interwoven in network structures. We theorize that two commonly studied network characteristics (i.e. structural embeddedness and centrality), due to the unique set of network resources and control benefits associated with each, are likely to have distinct impacts on interdependence with differential effects on collaborative success.

HYPOTHESES

Higher costs of forging new collaborative partnerships in an economic development context should incentivize partners to rely increasingly on their existing network ties (Feiock, Lee, & Park, 2012), leading to a greater dependence on exchange partners. Due to the higher levels of trust, shared norms, richer and more reliable information exchange, and the enhanced capacity and need for cooperative efforts, structurally embedded partners will place higher strategic value on those relationships. These shared network resources are likely to serve as a basis of joint *social power*, which should incentivize partners to increasingly leverage and rely on those ties, and the social power that they provide, to better pursue their social missions. As a result, shared network resources associated with structural embeddedness are likely to increase the mutual dependence between partners so that they can better meet their goals in the economic development context. Thus:

Hypothesis 1: Structural embeddedness is positively associated with mutual dependence.

Since EDOs are highly competitive, competing for grants, federal assistance, outside investments, clients, and for companies to locate within their respective jurisdictions (Blakely & Bradshaw, 2002), development efforts can be hampered by distrust and strong perceptions of fierce competition between communities for economic development projects (Gordon, 2007). This creates a tension between the incentive to compete and the incentive to cooperate (Feiock et al., 2012; Lee et al, 2012). Indeed, an EDO director from this study speaks of that tension: "We need to remove the barriers caused by competition that leads to fragmentation of efforts and wasting of resources. Collaboration and cooperation need to replace competition." Due to the greater relational orientation of mutually dependent partners and the greater trust it engenders (Lawler & Yoon, 1993, 1996), mutual dependence should reduce the uncertainty surrounding that tension in economic development efforts, thereby improving the collaboration between partners. We therefore hypothesize the following:

Hypothesis 2: Mutual dependence mediates the positive relationship between structural embeddedness and collaborative success.

Network resource imbalances should be especially salient in a rural, nonprofit context characterized by resource scarcity. In rural contexts, nonprofits rely heavily on their regional collaborations for resource access (Snavely & Tracy, 2000). In the context of a rural economic development network, less central EDOs have fewer ties, and in turn, less options for resource access. Consequently, less central EDOs should be particularly dependent on their partnerships with more central EDOs that can provide them critical network resources and capabilities. Conversely, more central EDOs have a lower need to depend on less central actors because they

10.5465/AMBPP.2017.41

have many more options for resource access. They are also more likely to possess other critical network resources such as reputation and/or capacity for broader coordination (e.g. leveraging multiple partnerships for development projects). Differences in network resources associated with relative centrality will increase differences in *social power* leading to greater dependence asymmetry between partners. We therefore hypothesize the following:

Hypothesis 3: Relative centrality is positively associated with dependence asymmetry.

In the context of economic development collaboration networks, such dependence asymmetry is likely to have a negative effect on collaborative success. Significant dependence asymmetry often makes collaboration between partners more difficult than collaboration between equal partners (Bergquist, Betwee, & Meuel, 1995; Mayo & Taylor, 2001; Ring & Van de Ven, 1992). Greater resources, influence, and status controlled by the central actor enables it to have more control over the partnership, which can lead to conflict and diminished value creation for exchange partners (Kim & Choi, 2015). Additionally, central actors may be overburdened with many incoming ties of dependence, since many organizations rely on them for resources. Greater dependence from the vantage point of the less central actor means that it has less power to extract value from the exchange. The interests and objectives of the more dependent partner are more constrained in the collaboration. This may lead to lower collaborative success compared with equally dependent partnerships characterized by higher levels of trust and less risk of opportunistic behavior (Gulati, 1998; Vangen & Huxham, 2003). Therefore:

Hypothesis 4: Dependence asymmetry mediates the negative relationship between relative centrality and collaborative success.

METHOD

The data were collected in a mixed-method study by Compion et al. (2015). They used a broad definition of local economic development to identify the organizations based on prior literature: the process by which local governments or community-based organizations seek to stimulate or maintain business activity and/or job creation (Blakely & Bradshaw, 2002). They also used local "emic" perspectives and understandings of what type of organizations might be considered an EDO by the development practitioners and experts within the region (Morey & Luthans, 1984). The final sample consists of 98 organizations operating in the rural region of eastern Kentucky. Included are key representatives of nonprofit economic development agencies, formal business alliances such as chambers of commerce, area development districts, tourism commissions, community development corporations, community action agencies, and workforce training institutions. Utilizing the detailed information regarding the nature of their partnerships, our analysis focuses on the 270 collaborative relationships/dyads that exist between the 98 EDOs.

Our analysis begins with both qualitative and quantitative description of the network data. We create a set of four network diagrams that reveal the basic structure of the collaboration network, and the pattern of dyadic dependencies within it. Each successive visualization shows ties of greater interdependence along its two dimensions. We then calculate correlations and provide summary statistics of each variable. To test our hypotheses, we use multiple regression assignment procedure (MRQAP) in combination with the Preacher and Leonardelli (2003) program to determine Sobel test statistics for indirect effects. This type of mediation analysis is appropriate given that the effect sizes and MRQAP coefficients can be interpreted in the same way as OLS coefficients (Krackhardt, 1988).

Visualizations

From the visualizations shown in Figure 1 below, we can make a few observations. First, the network reveals somewhat of a core-periphery structure (Borgatti & Everett, 2000), with a cluster of highly central organizations in the core and many organizations on the periphery. Second, there is quite a bit of variation in levels of mutual dependence between dyads, with ties ranging from 0 to 6. Dependence asymmetry, in contrast,

10.5465/AMBPP.2017.41

shows less variance, with the majority of ties of falling between 0 and 2. Third, dyads with higher mutual dependence tend to be clustered in the core between the more central organizations. It appears that the more mutually dependent organizations tend to have greater structural embeddedness. Fourth, relative centrality can be viewed as the difference in the size of each node. A select number of organizations have a high in-degree centrality within the collaboration network. Together, these observations reveal a network characterized by a core cluster of highly interdependent, central organizations, with fewer ties of mutual dependence to and between the more peripheral actors.

Figure 1 about here

Results

We calculated Sobel test statistics from two sets of mediation analyses from three models. Table 1 below reports the standardized regression coefficients based on 10,000 permutations. Model 1 shows a statistically significant ($p < .001$) positive effect of structural embeddedness ($\beta = .22$) on mutual dependence, supporting *H1*. In Model 3, when mutual dependence is included to predict collaborative success, structural embeddedness loses statistical significance and results in a Sobel test statistic of 3.03 ($p < .01$). This suggests a full mediation in the relationship between structural embeddedness and collaborative success, supporting *H2*. Model 2 and 3 do not indicate support for *H3* and *H4* that posited an indirect effect of relative centrality through the mechanism of dependence asymmetry. The full model (Model 3) reveals, however, a statistically significant *negative* direct effect of relative centrality ($\beta = -.14$; $p < .01$) and dependence asymmetry ($\beta = -.09$; $p < .05$) on collaborative success. This supports our logic that those two variables negatively impact collaborative success, but our analysis reveals they do so independently (i.e. rather than through mediation). The R-squared of the full model is .29, indicating substantial predictive power in the full model.

Table 1 about here

CONCLUSION

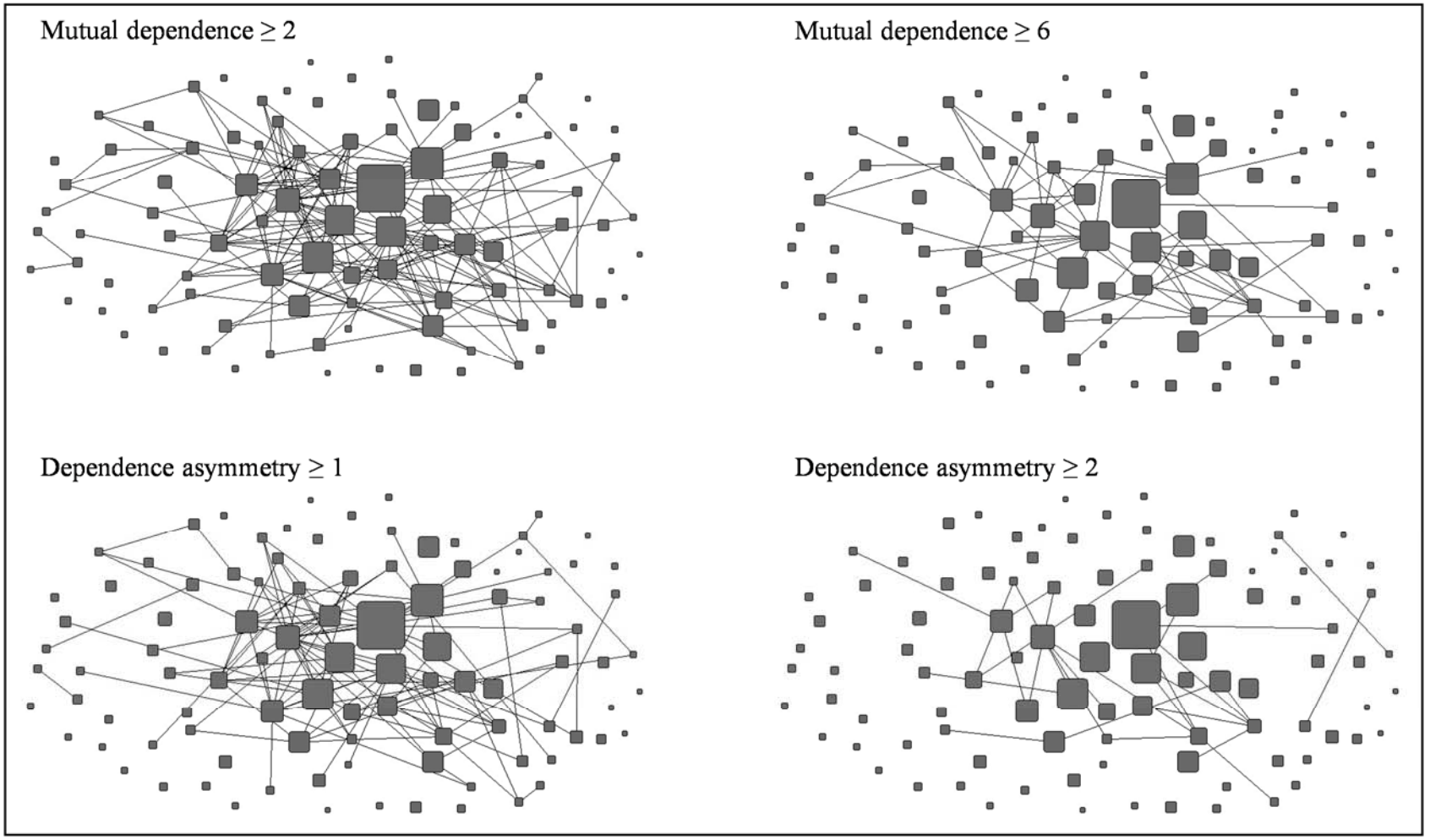
Our understanding of how social structure affects the dependence logic of RDT is very limited (Davis & Cobb, 2010). This paper argues and empirically documents that the social logic of embeddedness, characterized by sociological and social psychological arguments, complements RDT logic in that relationships can also be a basis of *social power*, in which networks create resource imbalances and impose constraints that are independent of dependencies strictly determined by market forces. We find that structural embeddedness directly impacts mutual dependence in the context of a not-for-profit collaboration network. On the other hand, our study finds no link between centrality differences and dependence asymmetry, suggesting that particular dimension of interdependence may be less a function of social structure in our unique context. These findings advance recent work suggesting that RDT and SNT offer promising, complementary, and interrelated explanations of IOR outcomes (Xia et al., 2016). Most significantly, they provide evidence that structural features of the larger network not only affect the outcomes of a focal organization, but the interdependence and collaborative success of a partnership.

REFERENCES AVAILABLE FROM THE AUTHORS

10.5465/AMBPP.2017.41

FIGURE 1

Collaboration Network of Economic Development Organizations



Node size determined by in-degree centrality

10.5465/AMBPP.2017.41

TABLE 1

MRQAP Results and Mediation Analysis

	Model 1: Mutual dependence	Model 2: Dependence asymmetry	Model 3: Collaborative Success	Sobel test
Organizational size difference	.10	-.03	-.02	
Organizational age difference	.18	.05	-.04	
Service area overlap	-.10	-.01	-.22***	
Service type overlap	-.01	.06	-.01	
Service breadth	-.06	-.02	-.17*	
Funding overlap	.09	-.03	.03	
Market power	-.13*	.05	.16*	
Structural embeddedness	.22***	-.04	-.08	
Relative centrality	.14**	.05	-.17**	
Mutual dependence		.01	.40***	3.03**
Dependence asymmetry	.01		-.11*	-0.72
N	358	358	270	
R^2	.13	.02	.29	

* $p < .05$

** $p < .01$

*** $p < .001$