

# COMPETITIVE BROKERAGE: EXTERNAL RESOURCE ENDOWMENT AND INFORMATION TECHNOLOGY AS ANTECEDENTS

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## ABSTRACT

We investigate the external resource endowment and capabilities that determine firms' competitive brokerage within competition networks. We use longitudinal data on M&A, strategic centrality and information management capability (IMC) of 297 firms. We find support for external resource endowment and substitutability between strategic centrality and IMC as antecedents of competitive brokerage.

## INTRODUCTION

In a globalized and embedded economy (Granovetter, 1985; McEvily & Marcus, 2005), market competition compels firms to gain relevant positions in their competition and collaboration networks to acquire competitive advantage (Aral & Van Alstyne, 2007; Bao, Sheng, & Zhou, 2012). The ability to identify, mobilize or develop resources to effectively reach those beneficial network positions is an essential factor in attaining superior firm performance. In the last two decades, researchers have recognized the importance of firm embeddedness in networks of social relations (Granovetter, 1985; Zaheer & Bell, 2005) and have focused on networks of collaborative actions. Scholars have found that occupying relevant positions in cooperation networks can bring several advantages to firms. For instance, Zaheer and McEvily (1999) found that bridging ties influence the acquisition of competitive capabilities thanks to the access to new information, ideas and opportunities that they provide. Ostensibly motivated by the multiple benefits of network positioning, researchers have extensively focused on analyzing the implications of network positioning in collaborative networks. Notwithstanding the enlightening contributions of these studies, the overwhelming attention to the outcomes of positioning in collaborative networks has led researchers to overlook competition networks and the determinants of positioning in such networks. In this study we analyze the determinants of a transcendental position in competition networks, which we term *competitive brokerage*. A firm in a competitive brokerage position lies between competitors' paths or disconnected competitors.

Competitive brokers or firms that hold a competitive brokerage position, not only receive several benefits that may influence their performance, but also play an important role in the global structure of competition networks. First, competitive brokers bring cohesion and coherence to competition networks (Rosenkopf & Padula, 2008) because they interlink different industries or firms competing in different markets. Hence, they enable the inter-industry flow of knowledge and information (Newman, 2009). Second, due to their

advantageous position, competitive brokers are enabled to spread or retain competitive actions (Vega-Redondo, 2007). Third, since competitive brokers rest between firms competing in distinct industries, they are able to retrieve novel and diverse information in a timelier manner (Burt, 1992; Granovetter, 1983, 1985).

Even though the analysis of determinants of positioning in competition networks is a nascent stream in the literature, some previous studies have examined the determinants of structural holes and bridging ties in cooperative networks. Although these studies explore distinct network contexts, they rely on past and surrounding structures of the same network in which the actors are located to explain the determinants of positioning (Sytych, Tatarynowicz, & Gulati, 2012; Zaheer & Soda, 2009), overlooking the resource and capability endowment that could determine network positioning.

Information technology (IT) and IT capabilities have been the target of multiple studies in the information systems (IS) literature due to their potential to provide firms with competitive advantage. Studies have examined the effects of IT on firm performance (Bharadwaj, Bharadwaj, & Konsynski, 1999; Devaraj & Kohli, 2003; Mithas, Ramasubbu, & Sambamurthy, 2011), competitive actions (Chi, Ravichandran, & Andrevski, 2010), firm productivity (Brynjolfsson & Hitt, 1996; Hitt & Brynjolfsson, 1996) and intermediate variables such as ambidexterity (Kathuria & Konsynski, 2012) and inventory turnover (Saldanha, Melville, Ramirez, & Richardson, 2013), demonstrating that IT is a relevant element to firm's strategy. Several studies have emphasized the complementarity between IMC and other firm resources (e.g. Powell & Dent-Micallef, 1997; Ravichandran & Lertwongsatien, 2005). However, the literature has overlooked that IMC could, as well, substitute organizational resources.

To fill these gaps, in this paper we study the determinants of competitive brokerage by exploring how the external resource endowment of the firm- strategic centrality (firms' central position in their network of strategic alliances), mergers & acquisitions (M&A)- and their interactions with IMC (an IT-enabled capability) enable firms to achieve a competitive brokerage position. We draw on the resource based view (RBV), the resource dependence view (RDV), social networks and IT business value literature and posit that strategic centrality and M&A have a positive effect on competitive brokerage. We also propose that IT-enabled IMC can function as a substitute of strategic centrality and M&A. Using a longitudinal multi-industry competition network, we test our hypotheses. The results provide support to our theory, firms' external resource endowment influences firms' competitive brokerage position and there is substitutability between strategic centrality and IMC to obtain a competitive brokerage position.

## **HYPOTHESES<sup>1</sup>**

The RBV posits that the differences in firm performance are a result of the heterogeneous distribution of valuable and rare resources and capabilities among firms. (Cockburn, Henderson, & Stern, 2000; Teece, Pisano, & Shuen, 1997). In the past, the RBV was limited to analyze the internal resources of the firm and how they could provide competitive advantages to firms (Barney, 1991; Gulati, Nohria, & Zaheer, 2000). However, in the last two decades researchers have built on the theoretical underpinnings of the RBV and the RDV to recognize that to achieve organizational success and a sustained competitive advantage,

firms not only rely on internal resources, but also on external resources (e.g. interorganizational ties) (Gulati, 1999; Gulati et al., 2000).

Few IS studies have invoked the notion of IT or IMC as a substitute (Dewan & Min, 1997; Jeffers, Muhanna, & Nault, 2008); however, some empirical studies have found that IMC can function as a substitute for other firm resources (e.g. Chi et al., 2010). From a statistical testing perspective, substitutes are characterized by a negative interaction effect and are the conceptual opposite of complements, which are characterized by a positive interaction effect (Tiwana, 2008).

We assert that strategic centrality positively influences firms' competitive brokerage. This effect may occur because companies in a strategic centrality position have a better access to partners' resources and enjoy consumers' higher quality perception. We hypothesize that M&A have a positive effect on competitive brokerage, because firms utilize M&A to obtain new resources and capabilities. Furthermore, we argue that IMC can function as a substitute of strategic centrality and M&A. We assert that IMC enables firms to integrate and synchronize internal information and resources and it allows firms to monitor markets.

### **Strategic centrality and competitive brokerage**

*Hypothesis 1: Strategic centrality has a positive effect on the competitive brokerage position of the firm.*

### **M&A and competitive brokerage**

*Hypothesis 2: M&A have a positive effect on the competitive brokerage position of the firm.*

### **Strategic centrality and IMC as substitutes**

*Hypothesis 3: Strategic centrality and IMC function as substitutes (negatively interact) for acquiring a competitive brokerage position.*

### **M&A and IMC as substitutes**

*Hypothesis 4: M&A and IMC function as substitutes (negatively interact) for acquiring a competitive brokerage position.*

## **METHODOLOGY**

### **Data and sample**

We relied on various data sources. To build a longitudinal firm-to-firm competition network, first we utilized data from a proprietary database for the years 2009-2011 and identified the companies, product categories, brands and products in 13 industries in the United States. Second, we obtained the firms' financial data from Compustat and Thomson Reuters Eikon. Third, consistent with previous IS research (e.g. Chi et al., 2010), we searched six main computer journals – eWeek, Networkworld, Computerworld, eWeek security watch, Infoworld,

and InformationWeek, and gathered information management news reports of the companies in our dataset over a 3-year span. We used structured content analysis to capture the information management capability of the firms. Fourth, we used the section “Joint Ventures/Strategic Alliances” of the SDC database to collect the alliance network data. We created networks and adjacency matrices for each year for the corresponding period. Fifth, we collected the M&A data from the Thomson Reuters Eikon database.

Considering that our data set includes firms from 13 different industries, we included both firm and industry level control variables.

## **Hypothesis testing**

To analyze our unbalanced panel data set, we used a random effects model under the assumption that each firm has its own systematic baseline and that each intercept “is the result of a random deviation from some mean intercept” (Chellappa & Saraf, 2010). To include the previous year competitive brokerage position in our model as a control variable, we utilized a two-stage regression procedure. Given that not all firms occupy competitive brokerage positions and there are some firms in the outskirts of the competition network, the distribution of firms’ competitive brokerage position is truncated to the left (to zero). Therefore, we used a random effects Tobit model. All independent and control variables were lagged one year in relation to the dependent variable to increase the confidence in the effects. Overall, the results of the control variables are consistent with prior research. Table 4 shows the standardized coefficient estimates of the models.

In Hypothesis 1, we assess the relationship between strategic centrality and competitive brokerage. As model 3 in Table 4 shows, strategic centrality positively relates to competitive brokerage ( $b=195.63$ ,  $p<0.01$ ) in support of Hypothesis 1. M&A has a positive effect on competitive brokerage ( $b=83.712$ ,  $p<0.01$ ), in support of Hypothesis 2. In order to prevent multicollinearity, we used mean-centered measurements to create the interaction terms. Hypothesis 3 proposes that strategic centrality and IMC function as substitutes for acquiring a competitive brokerage position. A substitution effect requires a negative and significant interaction between strategic centrality and IMC. As model 3 in Table 4 illustrates, this interaction is negative and significant ( $b= -207.88$ ,  $p<0.001$ ). Therefore, Hypothesis 3 is supported. As model 3 in Table 4 shows, the interaction between M&A and information management capability is not significant ( $b= -51.18$ ,  $p>0.10$ ). Hence, we did not find support for Hypothesis 4.

|----- Insert Table 4 about here -----|

## **DISCUSSION**

Building on the Resource Based View and the Resource Dependence View, we extend current and emergent research in the field of origins of network structures by examining the determinants of competitive brokerage. We find that the acquisition of a competitive brokerage position can be understood as a function of the external resource endowment of the firm (strategic centrality and M&A) and internal firm capabilities (information management capability). We further extend extant IS literature by finding that information management capability (IMC) and strategic centrality function as substitutes to acquire a competitive

brokerage position. Thus, our study represents an early attempt to explore how IT influences positioning in competition networks.

## TABLES

Table 4. Standardized Coefficient Estimates: Regression Analysis for Competitive Brokerage Position

	Competitive brokerage					
	Model 1(Control)		Model 2		Model 3	
	$\delta$	t-value	$\delta$	t-value	$\delta$	t-value
Controls	...	...	...	...	...	...
Strategic centrality			259.4**	(3.28)	195.6**	(2.79)
M&A			86.36*	(2.46)	83.71**	(2.66)
IMC			118.3*	(2.05)	243.0***	(3.96)
Strategic centrality X IMC					-207.9***	(-4.11)
M&A X IMC					-51.18	(-0.79)
N	562		562		562	

t statistics in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

<sup>1</sup> Due to space limitations, additional rationale for the proposed relationships has been withheld from this abridged document.

## REFERENCES AVAILABLE FROM THE AUTHOR(S)