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Power and collaborative climate: building competitive advantage through flexibilities

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ABSTRACT

In a buyer-supplier relationship (BSR), how is a manufacturer's power related to its collaborative supplier climate and how do these two governance mechanisms simultaneously influence a firm's performance? Evaluating 201 responses from senior manufacturing indicates that power and collaborative climate are positively related. A manufacturing firm's power positively impacts cost and non-cost competitive advantage and is fully mediated by the firm's flexibility. When flexibility exists, a manufacturer's collaborative climate positively influences non-cost advantage and flexibility, with only an indirect impact on cost. This suggests that manufacturing companies need both power and a collaborative climate to sustainably improve overall performance.

KEYWORDS: Supply chain, power, collaborative climate, competitive advantage

1. INTRODUCTION

To cope with increasing changes in competition, manufacturing firms are willing to cooperate with suppliers, manage supplier relationships based on trust and long-term orientation, and communicate more frequently and intensively with suppliers (Cai and Yang, 2008; Singh and Power, 2009; Zhang and Cao, 2011). Despite these adaptations to the traditional buyer-supplier relationship (BSR), the influence of a manufacturing firm's power has been rarely addressed in the literature (Cox, 1999). Simultaneous empirical investigations of the influence of a manufacturing firm's power and a collaborative climate towards its suppliers are even more rare.

Although power and collaborative climate are two different social forces in a buyer-supplier relationship, they are intended to promote desired behaviors in suppliers that favor this manufacturer so that they can co-exist and work together successfully. Power can be used to manage the efficiency of transactions between a manufacturing firm and its suppliers, although the concept of power is a concept that requires opinion alignment and agreement between the dyad. Collaborative climate can foster a long-term BSR so that efficiency is sustainable. This paper contributes to the literature by empirically investigating how these two governance forces work together in a BSR and how they simultaneously influence firm performance. Another contribution of this research is to test the mediating effect of flexibility on the relationships between power and firm performance and between collaborative climate and firm performance,

to better explain the importance of flexibility in sustaining a manufacturing firm's competitive advantage.

In the next section, each construct and its interactions are discussed. Following, the research methodology is introduced along with a measurement model. Results of the structural equation model are presented next and the discussion and recommendation for future research are included to conclude.

2. LITERATURE REVIEW AND MODEL DEVELOPMENT

Although power remains a more subjective topic in a BSR, both power and collaboration are important managerial aspects of influencing suppliers' behavior so that the competitive advantages are sustained. We argue that (1) power and collaborative climate do not contradict each other but are positively correlated to each other, (2) they are both positively related to firm performance, and (3) the effects of power and collaborative climate on firm performance are mediated by a manufacturing firm's flexibility. Figures 1a and 1b illustrate these relationships.

*******Insert Figures 1a and 1b about here*******

2.1. A manufacturer's power over its supplier

Power features prominently in buyer-supplier relationships. In this research, power is considered a manufacturing firm's ability to get its suppliers to do what would otherwise not have been done with regard to quality control, product design, process management, material management, and information systems (Gaski, 1988; Lambert and Cooper, 2000; Weber et al., 1991; Wheelwright, 1984). This definition is based on decision areas (e.g., quality control) over which power can be exerted. Some prior research conceptualizes a manufacturer's power over its suppliers based on sources of power (i.e., reward, coercive, legitimate, referent, and expert powers) (Benton and Maloni, 2005; Handley and Benton, 2012; Zhao et al., 2008). Other prior research defines power based on the dependence of other firms on the focal firm (Emery and Marques, 2011; Krajewski et al., 2005) or defines it more generally (Song and Benedetto 2008).

Compared to prior research, the power definition utilized in here has several advantages. As decision areas are aligned with a manufacturing firm's operations structure, this perspective is able to distinguish a manufacturing firm's power over its suppliers from a firm's power over its customers and other downstream channel members. In addition, a power definition based on decision areas lets a manufacturing firm know its strengths and weaknesses in each decision area so that it can identify areas ripe for improvement. It is also easier for a manufacturing firm to exercise its power in a sole decision area than use a single source of power. For example, when a supplier signs a contract with Apple to provide a customized laser (Satariano and Burrows, 2011), the contract is Apple's legitimate source to reward or punish this supplier. The supplier accepts that contract with the intent of expected benefits from collaborating with a valuable global company, which reflects Apple's reference and expert powers. In this case, Apple's power is a combination of all power sources.

2.2. A manufacturer's collaborative climate towards its suppliers

Based on the organizational climate concept (Patterson et al., 2003), the collaborative climate developed by a manufacturing firm shapes the atmosphere of shared norms, beliefs, and attitudes regarding the firm's supplier relationships. Among all aspects of a firm's climate towards its suppliers, trust and long-term orientation most influence relationship performance (Wagner et al., 2010). Trust is a cumulative factor in a quality BSR and is important for a manufacturing firm to maintain long-term relationships (Wagner et. al., 2010). A long-term oriented manufacturing firm is more likely to maintain closer relationships with its suppliers. The

closer relationships can result in less opportunistic supplier behavior, which then facilitates a manufacturing firm to cultivate more trust toward its suppliers (Lui and Ngo, 2012).

Of course, trust and long-term orientation do not exist in vacuum. Two major approaches of building trust and developing long-term orientation are through open communication and through prior cooperation with suppliers (Lui & Ngo, 2012; Morgan & Hunt, 1984). Open and timely communication fosters trust by helping resolve conflicts and reaching agreements in a BSR (Morgan & Hunt, 1984). The success of prior cooperation between a manufacturer and its suppliers indicates lower risk in collaborating with the same suppliers in the future. The perception of lower risk facilitates long-term orientation (Lui & Ngo, 2012). Reciprocally, trust and long-term orientation are argued to be able to enhance communication, facilitate information sharing, and foster learning and cooperation between two organizations (Patterson et al., 2003).

2.3. Power and collaborative climate: two sides of a supplier-manufacturer relationship

Power and collaboration are both relational concepts that explain how a manufacturer and suppliers interact in their relationships. From Social Exchange Theory, every relationship has two sides, the symmetrical side that deals with the harmony between two entities in a relationship, and the asymmetrical side that deals with the conflict in a relationship (Baldwin, 1978; Pilbeam, 2013). Based on this theory, power and collaborative climate are two governance mechanisms that a manufacturing firm uses to deal with conflict and promote harmony simultaneously in a manufacturer-supplier relationship. Although there must be alignment between manufacturer and supplier perspectives, particularly with regard to who holds greater power, we argue that it is necessary to manage both power and collaboration in a BSR because they are interdependent and managing either one alone may deteriorate a long-term relationship.

First, power and collaboration complement each other. A manufacturing firm's power comes from suppliers' dependence on some resources owned by the manufacturer or suppliers' expected benefits of working with the manufacturer (Krajewski et al., 2005). Such dependence and expected benefits are sources of power, making suppliers more likely to collaborate with a manufacturing firm. On the other hand, collaboration prevents a manufacturing firm from misusing its power in a buyer-supplier relationship. Exercising power properly is critical to having positive influences of power on suppliers' satisfaction and firm performance (Benton & Meloni, 2005).

Second, either power or collaboration alone cannot build a long-term successful buyer-supplier relationship. A manufacturing firm with diminishing power has less control over suppliers' opportunistic behaviors (Ahmadjian & Lincoln, 2001) and a manufacturing firm without a collaborative supplier orientation may abuse its power over suppliers (Cox, 1999). In either case, the quality of a buyer-supplier relationship will not be sustained and that will hurt firm performance in a long run.

Hypothesis 1: A manufacturing firm's power over its supplier is positively correlated to its collaborative climate towards its suppliers.

2.4. A manufacturing firm's competitive advantage

Competitive advantage indicates the extent to which an organization is able to develop an edge over its competitors (McGinnis & Vallopra, 1999). In this study, two competitive advantages: cost and non-cost (i.e., quality, dependable delivery, and time-to-market) are considered. Cost and the other three measures are separated because they represent two distinct sets of measures (Krause et al., 2007). Cost advantage indicates a manufacturer's ability to maintain profit. Cost means to compete by providing products with the lowest cost. Non-cost competitive advantages reflect a manufacturer's ability to provide a high level of customer service (Shepherd & Gunter, 2005). These customer service focused measures

cannot be easily copied by other competitors and thus have sustainable value. Quality means to compete by having products that consistently meet or exceed the customer's expectations. Dependable delivery means to compete by consistently delivering the right product to customers at the right time. Time-to-market means to compete by providing the product faster to customers.

2.5. Direct effects of power and collaborative climate on the firm's competitive advantage

A manufacturer's power with regard to quality control (e.g., inspection) first ensures that suppliers' products meet the manufacturing firm's standard and thus these products will not cause delays and interrupt a manufacturer's operations (Ho et al., 2010). Second, in order to bring a satisfied product to customers, a firm needs suppliers' cooperation in product design related activities (e.g., function) (Vonderembse & Tracey, 1999). Third, a manufacturing firm's ability to get its suppliers to change their processes (e.g., technology capability) determines the extent of alignment between a manufacturing firm and its suppliers (Liker & Choi, 2004). Fourth, the degree to which suppliers would comply with the manufacturer's requests in material management (e.g., storage and retrieval) influences a manufacturing firm's ability to provide speedy and reliable delivery at low cost (Fogarty et al., 1991). Last, suppliers' information systems' adjustments (e.g., network accessibility) as requested by a manufacturing firm, support that manufacturer's inter-firm cooperation (Gunasekaran & Ngai, 2005). As mentioned above, changes in suppliers' quality systems, product management, process, material management, and information systems enhance the manufacturing firm's capabilities to compete on price, quality, delivery, and time-to-market. Therefore, it is hypothesized that:

Hypothesis 2a: A manufacturing firm with a higher level of power over its supplier is more likely have a higher level of cost competitive advantage.

Hypothesis 2b: A manufacturing firm with a higher level of power over its supplier is more likely have a higher level of non-cost competitive advantage.

A climate of trust is able to facilitate information sharing and foster learning between two organizations, contributing greater knowledge and appreciation to a BSR (Corsten & Kumar, 2005). Such openness to a relationship results in greater satisfaction that leads to longer-term successful relationships between a manufacturer and suppliers. With a long-term orientation, a manufacturing firm expects to work closely with its suppliers over a longer period of time. In addition, suppliers could benefit from a BSR with a long-term orientation by having long-term contracts and frequent transactions. The close tie between partners results in a stable relationship and improved performance (Das & Teng, 1998). Open communication allows a manufacturer to become more familiar with suppliers, have a better view of their capabilities, and better predict their behaviors (Morgan & Hunt, 1984). In return, trust and a long-term orientation encourage a manufacturer to communicate with suppliers more frequently and intensively. This reciprocal process commits a manufacturer and its suppliers to their relationships, reduces opportunistic behaviors and eventually improves relationship performance. Prior cooperation combines manufacturer and supplier resources to achieve common goals (Lui & Ngo, 2012). Trust and long-term orientation then foster more cooperation with suppliers in the future, which leads to overall enhanced relationship performance. Given the importance of a manufacturing firm's collaborative company climate on the firm performance, it is hypothesized that:

Hypothesis 3a: A manufacturing firm with a higher level of collaborative climate towards its supplier is more likely have a higher level of cost competitive advantage.

Hypothesis 3b: A manufacturing firm with a higher level of collaborative climate towards its supplier is more likely have a higher level of non-cost competitive advantage.

2.6. A manufacturing firm's flexibility

A manufacturing firm's flexibility improves its adaptability in dynamic environments and the sustainability of its competitive advantages in a supply chain (Narasimhan et al., 2004). In this research, a manufacturing firm's flexibility includes product development (new product introduction and product modification) and production (production volumes and product mixes) flexibilities (Narasimhan et al., 2004; Zhang el al., 2003). Because of these multi-dimensional characteristics, flexibility also needs to be measured by range and mobility (Koste & Malhotra, 1999; Swafford et al., 2006). Range is represented by the number of options offered and the degree of difference among those options offered by a manufacturer. Mobility indicates the responsiveness within the set of products offered, i.e., how quickly and efficiently a switch can be made.

2.7. The mediating effect of a manufacturing firm's flexibility

There are three aspects of a manufacturing firm's flexibility level (Zhang el al., 2003). A high level of flexibility means efficiency in developing new products, modifying existing products, adjusting product varieties and changing production volume. In other words, the manufacturing firm can provide products to its customers at minimal cost. Flexibility also means that the manufacturing firm is able to make prompt changes in product development and production. Thus the firm can introduce products quickly to market, improving the firm's capability to offer a time-to-market that is lower than the industry average. Flexibility indicates that the manufacturing firm is able to maintain the same level of product quality and delivery reliability despite changes in product development and production. Therefore, flexibility ensures the high quality of products and dependable delivery offered by the manufacturing firm.

Power and collaborative climate indicate the different ways a manufacturing firm deals with its suppliers. When a manufacturing firm exerts its power, it explicitly requests that its suppliers make changes in the various decision areas. When a manufacturing firm uses a collaborative climate towards its suppliers, it openly discusses discrepancies, builds cooperation over time, develops trust and posits long-term orientations (Lui & Ngo, 2012; Wagner et. al., 2010). These tactics let suppliers feel confident that if they responsively make the changes requested by the manufacturing firm, they will get more benefits in the long-term and thus are willing to make changes. With changes being made as a result of either a manufacturing firm's power or the firm's collaborative climate, suppliers are better aligned with the manufacturer's operations. With supplier assistance, the manufacturing firm can then respond to customer demand more efficiently and effectively by changing its product development and production, resulting in higher flexibility. Eventually, with increasing flexibility, the firm can better serve customers with low cost, high quality, dependable delivery and quick time-to-market. Giving the relationships mentioned above, it is hypothesized that:

Hypothesis 4a: A manufacturing firm's flexibility mediates the effect of its power over its suppliers on cost advantage and non-cost advantage.

Hypothesis 4b: A manufacturing firm's flexibility mediates the effect of its collaborative climate towards its suppliers on cost advantage and non-cost advantage.

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Measurement Development

Manufacturing firm power items were developed based on power literature (El-Ansary & Stern, 1972; Gaski, 1988; Benton & Maloni, 2005) and literature related to five decision areas (Fogarty et al., 1991; Gunasekaran & Ngai, 2005; Ho et al., 2010; Liker & Choi, 2004; Vonderembse & Tracey, 1999). Power variable items were measured through managerial perceptions using 5-point Likert scales (1 = strongly disagree to 5 = strongly agree) to indicate

the extent to which respondents agreed or disagreed with each statement as it applied to their firm's power over suppliers in *quality control* (e.g., inspection of parts shipped to the manufacturing firm), *product design* (e.g., product design capability), *process management* (e.g., process equipment), *material management* (e.g., material verification and tracking methods), and *information systems* (e.g., network accessibility).

A manufacturing firm's collaborative climate items were developed based on BSR literature with trust, long-term orientation, communication and cooperation foci (Lui & Ngo, 2012; Morgan & Hunt, 1994; Patterson et al., 2003; Wagner et al., 2010). Collaborative climate items were measured using 5-point Likert scales to indicate the extent to which respondents agreed or disagreed with statements that a manufacturing firm's external climate facilitated trust, long-term orientation, cooperation, and open communication with their suppliers.

Flexibility items were developed based on flexibility literature (Koste & Malhotra, 1999; Zhang et al., 2003). Flexibility items were measured using 5-point Likert scales regarding a manufacturing firm's flexibility in product development (e.g., introduce new products efficiently) and production (e.g., operate at many high and low production volumes). A firm's competitive advantage items were modified from performance measures used in prior research (e.g., Krause et al., 2007). These items were also measured using 5-point Likert scales regarding a manufacturing firm's capability to compete by offering competitive prices, high quality, dependable delivery, and time-to-market that is lower than the industry average.

After the literature review, a questionnaire was developed and pre-tested to refine content validity through consultations with professionals and practitioners with extensive BSR knowledge. A Q-sort method was applied in a pilot study to assess the preliminary convergent validity and discriminant validity of the instruments (Moore & Benbasat, 1991). Items were revised as needed based on expert feedback, for the large-scale survey.

3.2 Data Collection

The data was collected via an online survey of supply chain professionals in various U.S. manufacturing companies. Respondents took the role of buyers in responding the survey. An initial invitation was sent to each of the potential respondents by email with a link to the online survey website. Two reminder emails were sent out as follow up. Respondents were offered the research results as an incentive for participation and provided with other options (e.g., mail or fax) to answer the survey. 201 usable responses were received, yielding a 3.3% response rate. The response rate (3.3%) of this research is comparable to other research in management literature (e.g., Beltran-Martin et al., 2008), considering a large amount of emails which were likely filtered by security systems, expired due to relocation, and/or the declining response level of top management to email surveys (Baruch & Holtom, 2008; Klassen & Jacobs, 2001).

The external validity of the sample was examined based on the sampling design, its representativeness, and sample size (Short et al., 2002). The study population was collected from three databases of executive contacts, accounting for a large share of the total business and total population of U.S. firms. In addition, the sample covered more than nine manufacturing sectors with a good balance and covered companies of different sizes and different annual sales. For these reasons, the results can be generalized for small, medium, and large companies across a variety of manufacturing industries. Moreover, respondents, including top executives, senior production managers, senior logistics managers, senior purchasing managers, are expected to be knowledgeable of the capabilities of their companies and suppliers, resulting in suitability for this research.

The sample's representativeness was accessed by non-response bias in terms of company size and annual sales. Differences between the 201 respondents[1] and the population[2]

[1] Total number of respondents was 201. However, three respondents didn't provide the company size and annual sale information. Therefore, only 198 were used to calculate the non-respondent bias.

were examined by using Chi-squared tests (Short et al., 2002) among four categories (under 100, 100-249, 250-999, and more than 1000) for company size and five categories (under $10M, $10M-$49M, $50M-$99.9M, $100M-$499.9M, and more than $500M) for annual sales. The results (χ^2=2.98, df=3, p>0.25 for company size, and χ^2=1.87, df=4, p>0.5 for annual sales) indicated no significant differences between the sample and the population; thus, response bias is not an issue.

A sample size over 150 or 200 is commonly considered necessary to be able to perform a stable and a rigorous SEM model (Hair et al., 2005). The sample size of 201 useable respondents met this need.

4. MEASUREMENT MODEL RESULTS AND MODEL FIT

To address the issue of common method variance, a single factor model evolving all items is tested (Podsakoff et al. 2003). The model-fit indexes of the model (χ^2= 232.303, df = 377, p = 0.000; RMSEA= 0.161, 90% confidence interval ranging from 0.155 to 0.17; GFI = 0.471; AGFI = 0.389; RMR= 0.117; NFI = 0.327; CFI = 0.31) were far from the acceptable value (Byrne 2001), which indicates that common method variance did not exist.

A manufacturing firm's flexibility was measured by two first-order variables (i.e., product development and production flexibilities). A manufacturing firm's power was measured by five first-order variables (i.e., quality control, product design, process management, material management, and information systems). A manufacturing firm's collaborative climate and non-cost competitive advantage were first-order variables. The cost advantage was a single item measure. Confirmatory factor analyses (CFA) were used to examine the unidimensionality and reliability of nine first-order variables and two second-order variable. The fit indexes of the measurement model indicate the model is acceptable (χ^2=3650.081, df=406; NFI=0.848, CFI=0.940; RMSEA=0.520). All item-to-factor loadings were greater than 0.5 (p<0.001), indicating acceptable scale unidimensionality (Ellis et al., 2010; Shah & Goldstein, 2006). Composite Reliability (CR) values exceeded the 0.7 cutoff for all variables, indicating acceptable reliability (Fornell & Larcker, 1981). AVE values of the seven variables (except non-cost competitive advantage and power) surpassed the 0.5 cutoff. AVEs of two variables were close to cutoff values (0.484 for non-cost competitive advantage and 0.492 for power). The CR values of each variable were greater than its AVE, indicating convergent validity is satisfied (Fornell & Larcker, 1981). Discriminant validity was assessed by comparing the AVE and the MSV for each variable (Fornell & Larcker, 1981). The MSV for each variable was less than the AVE for that variable, which indicated adequate discriminant validity for all variables (Fornell & Larcker, 1981).

After constructs were validated, the hypothesized relationships were tested in a structural model. Weighted scores were calculated for product development and production flexibilities. Composite scores were used as the observed items for a manufacturing firm's flexibility in the structural model. Weighted scores were also calculated for quality control, product design, process management, material management, and information systems of a manufacturer's power regarding its suppliers. Composite scores were used as observed items for a manufacturing firm's power in the structural model. Collaborative climate was a first-order variable and corresponding items were observed items for this variable in the structural model. Non-cost competitive advantage (NCCA) is a formative rather than reflective variable. For this reason, the weighted value of NCCA was used (Bozarth et al., 2009; Cua et al., 2001). The cost

[2] One source that provided a mailing list did not disclose information about company size and annual sales. The number of contacts provided by this source is less than 15% of the entire population. Therefore, we calculated the non-respondent bias by comparing the respondents with the population from the other two sources where the company size and annual sales information were available.

advantage is a single item variable and that single item was used in the structural model. Results of the structural model indicated a reasonable model fit (χ^2=1653.516, df=78; CFI=0.970, NFI=0.936; RMSEA=0.064).

5. DISCUSSION

Hypotheses results are summarized in Table 1. Hypothesis 1 evaluated the correlation between power and collaborative climate, and was tested in the mediated model. Results show a significant correlation between the two governance mechanisms with 0.259 of a standardized regression weight and 3.065 of a critical ratio. This suggests that power and collaboration, two very different governing mechanisms developed by the manufacturing firm, are interdependent rather than independent. A direct effect model is used to test Hypotheses 2 and 3. Hypothesis 2 captured the influence of power on competitive advantage. Results suggest that power has a significant direct impact on both cost (standardized coefficient=0.298) and non-cost competitive advantage (standardized coefficient=0.304) in the direct model, thus Hypothesis 2 was supported. Results of Hypothesis 3 show an insignificant effect of collaborative climate on cost or non-cost in the direct model, thus Hypothesis 3 was not supported.

Testing of the mediation effect of flexibility, Hypothesis 4, was conducted through two structural models. A direct effect model was used to test the relationship between a predictor and a dependent variable (power and climate to cost and non-cost in the context of this paper). Since the direct effects of power on cost and non-cost were significant, the mediation effect test for Hypothesis 4a continued with a mediated model. In the mediated model, results suggest that power significantly affects flexibility, which significantly and positively affects cost and non-cost. In addition, direct effects of power on cost and non-cost in the mediated model were not significant. In other words, their direct effects diminished when flexibility (the mediator) is present. Therefore, Hypothesis 4a was supported and flexibility fully mediated the relationship between power and cost and the relationship between power and non-cost. Despite this, the direct effects of climate on cost and non-cost in the direct model were not significant. Therefore the mediation effect test was not continued and there was no mediated effect of flexibility found on either relationship. Hence, Hypothesis 4b was not supported.

A noteworthy finding was that even the direct effect of climate on cost and non-cost in the direct model were not significant, while the indirect effects of climate on cost and non-cost were both positive and significant in the mediated model. In addition, in the mediated model, climate positively and significantly affected the non-cost competitive advantages directly.

*******Insert Table 1 about here*******

6. SUMMARY

Manufacturers are striving to achieve competitive advantage through simultaneous self-improvement initiatives and working with suppliers. Prior BSR research often overlooked power as a governance mechanism in manufacturer-supplier relationships. This research shows that manufacturing firm power and collaborative climate are positively correlated, which means they are not exclusive in a BSR. Furthermore, in the direct model, the firm's power, not collaborative climate, has direct positive impacts on competitive advantage. With flexibility presents, collaborative climate shows significant indirect effects on competitive advantage and significant direct effects on non-cost advantages. Such results also indicate the importance of a balance of power and collaborative climate for manufacturing firms (Ireland & Webb, 2007). Simultaneously managing power and collaborative climate are important to maintain a sustainable BSR, and improve overall competitive advantages.

The results of Hypothesis 4 also indicate the importance of a manufacturing's flexibility on its competitive advantages. With improved flexibility in production and product development,

the indirect impacts of power and collaborative climate on cost and non-cost competitive advantages are significant and positive. In fact, in the mediated model, the direct impact of power on non-cost competitive advantage and the direct impact of collaborative climate on cost are negative. Although neither negative impact is significant, without the effect of flexibility, the overall performance worsens.

7. CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

Although this research provides several significant contributions, some limitations need to be addressed in future research. First, this research is a cross-sectional study. Future longitudinal research may provide further insights underlying the relationships between power, the collaborative climate, flexibility and competitive advantages. Since power is a concept requiring mutual agreement between partners, it is possible that the participants had differing views on the power balance in the interaction under analysis, hence power agreement can be examined further. Second, multiple respondents, multiple methods for obtaining measures, and randomizing the item order can be used in future research to moderate mono-respondent problems. The non-random initial sample of US-based supply chain executives of more than nine manufacturing sectors, although representing a good balance and coverage of firms, is a slice of total possible firms and thus could be expanded in future work. Third, future research can improve response rates by using different media for data collection, reaching the intended respondents via state-of-the-art techniques, shortening the questionnaire, and establishing collaborative relationships between researchers and respondents (Dillman et al., 2009). Fourth, because of the low reliability of customer service competitive advantages, a second-order construct might be considered to better represent variables. In addition to these methodological limitations, different research models can be considered. For example, if a manufacturing firm has limited resources to improve its power in one first-order power construct (e.g., quality management), how will the power on quality management and the firm's collaborative climate impact the firm's cost and non-cost competitive advantages?

Overall, this research contributes to the literature by investigating the importance of two governance mechanisms for a BSR and proposes a balanced emphasis on both power and collaborative climate for a manufacturing firm to achieve sustained completive advantages through improving flexibility in product development and production.

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FIGURE 1a: Research model - directed model

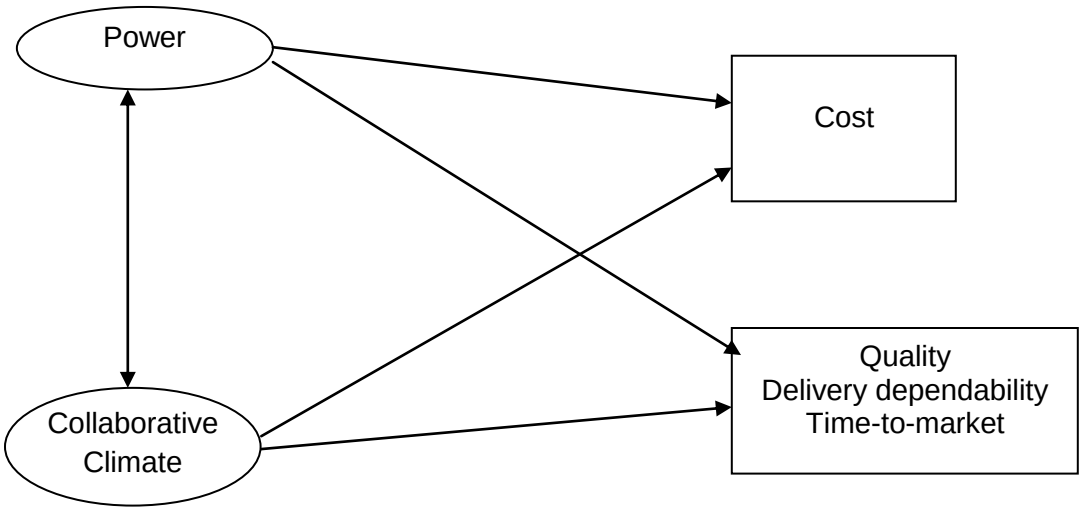

FIGURE 1b: Research model - mediated model

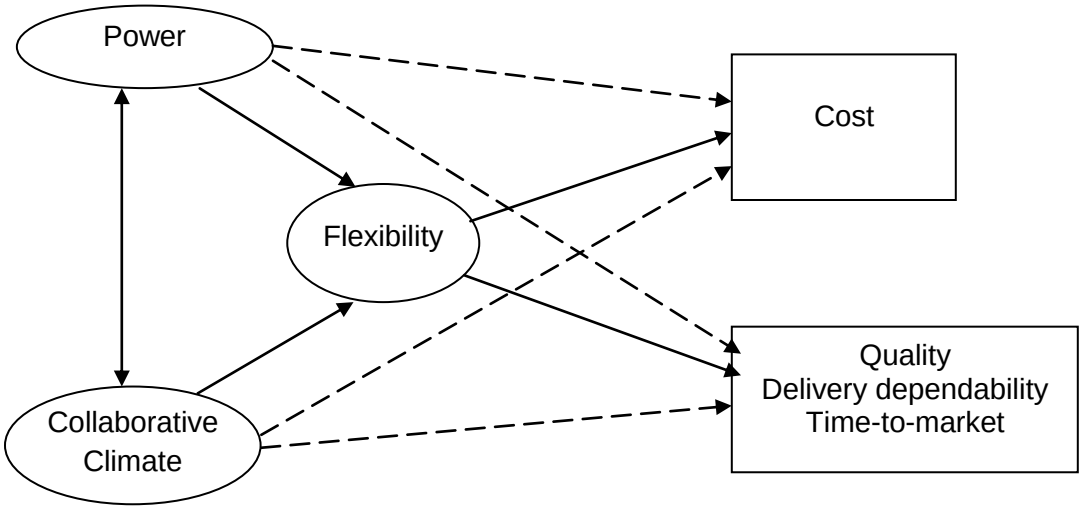

TABLE 1: Results of structural model

	Model used	Support the hypothesis or not?
H1: Power (MP) ←→Climate (MCC)	Mediated model	Yes ($p<0.01$, standardized coefficient=0.259, critical ratio=3.065)
H2a: Power (MP)→Cost	Direct model	Yes ($p<0.01$, standardized coefficient=0.298, critical ratio=3.037)
H2b: Power (MP)→ Non-cost (NCCA)	Direct model	Yes ($p<0.01$, standardized coefficient=0.304, critical ratio=3.141)
H3a: Climate(MCC)→ Cost	Direct model	No (standardized coefficient=-0.168, critical ratio=-1.781)
H3b: Climate(MCC)→ Non-cost (NCCA)	Direct model	No (standardized coefficient=-0.008, critical ratio=-0.092)
H4a: The mediating effect of flexibility for MP→Cost and MP→Non-cost	Direct and mediated model	Yes. Flexibility fully mediated the impacts of power on cost and non-cost. In the direct model, the effects of flexibility on cost and non-cost were significant at $p<0.001$. In the mediated model, the direct effects of power on cost and non-cost were insignificant while the indirect effects were significant at $p<0.05$ and $p<0.01$.
H4b: The mediating effect of flexibility for MCC→Cost and MCC→Non-cost	Direct and mediated model	No (No mediating effect is applicable because in the direct model, the effects of MCC on cost or non-cost were insignificant). However, the indirect effects of MCC on cost and non-cost are both positive and significant at $p<0.05$ and $p<0.01$.