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POWER, SHARED GOALS, AND SUPPLIER FLEXIBILITY: A STUDY OF THE HUB-AND-SPOKE SUPPLY CHAIN

STRUCTURED ABSTRACT

Purpose

Supplier flexibility reflects a supplier's operations-related decisions in responsively providing the necessary inputs to the focal firm. Drawing on resource-dependency theory and transaction cost economics, this study develops a conceptual framework to explain the differential effects of a focal firm's power over supplier flexibility in the context of the hub-and-spoke supply chain (SC). This study also considers the goals shared between the focal firm and its suppliers as an important contingency factor within the framework.

Design/methodology/approach

This study tests the proposed conceptual framework using dyadic survey data from a hub-and-spoke SC consisting of a large construction contractor and its 100 suppliers in Indonesia.

Findings

The findings show that coercive power has an inverted U-shaped effect on supplier flexibility, while legal-legitimate power has a U-shaped effect. Furthermore, shared goals positively moderate the U-shaped effect between legal-legitimate power and supplier flexibility.

Originality

This study differentiates between the impacts of coercive power and legal-legitimate power on supplier flexibility in the hub-and-spoke SC. It also demonstrates that shared goals play a moderating role in affecting the impacts of legal-legitimate power on supplier flexibility. These findings also have important implications with regard to integrating resource-dependency theory and transaction cost economics to explain these associations.

Keywords: Supplier flexibility, Power, Shared goals, Hub-and-spoke supply chain, Influence strategies.

INTRODUCTION

A focal firm today often relies on specialised suppliers to provide the necessary inputs (e.g., materials, components, etc.) for its assembly line. In this situation, supplier flexibility is critical in enabling the focal firm to respond to its customers' changing needs. We define supplier flexibility[1] as the behavioural outcomes capturing the extent to which a supplier can meet the focal firm's expectations and deliver on its special requests (Malhotra and Mackelprang, 2012). It reflects a supplier's operations-related decisions in providing the necessary inputs to the focal firm in a responsive fashion[2]. For example, a focal firm may ask its supplier to deliver more materials (e.g., bricks & blocks, timber, etc.) than a prespecified order quantity and sooner than the prespecified time. A flexible supplier is more likely to accommodate the focal firm's special requests. The importance of supplier flexibility has stimulated significant research exploring how a focal firm can promote flexibility in its suppliers to maintain its competitiveness in the marketplace.

The previous research on this topic essentially falls into two main categories. The first encompasses research focusing on the use of supply chain (SC) management strategies. This line of research demonstrates that the focal firm can adopt various SC management techniques to promote flexible behaviour among suppliers. For example, Liao et al. (2010) demonstrate the relationship between supply management (e.g., supplier selection) and supplier flexibility, while Omar et al. (2012) find that the development of global supplier integration can promote supplier flexibility. The second research stream focuses on using influence strategies to pressure suppliers to flexibly respond to the focal firm's special

[1] We acknowledge the difference between "SC flexibility" and "supplier flexibility". The former represents the complete (SC network) system flexibility that includes a wide range of activities (e.g., supplier flexibility, logistical flexibility, mix flexibility, new product development flexibility, etc.) (Malhotra and Mackelprang, 2012; Sánchez and Pérez, 2005). Supplier flexibility, meanwhile, is a component of SC flexibility, which focuses solely on a supplier's actions in providing the necessary input materials responsively (Liao et al., 2010; Malhotra and Mackelprang, 2012). This study focuses on the latter.

[2] We wish to clarify that supplier flexibility is a supplier's act beyond its prespecified responsibilities in providing necessary inputs to the focal firm (Liao et al., 2010; Malhotra and Mackelprang, 2012). This means that a supplier can decide whether or not to accommodate the focal firm's special requests. This research explores the factors that influence the supplier behavioural outcomes of being flexible.

requests. Influence strategies are compliance-gaining tactics (Boyle et al., 1992). Previous research shows that a focal firm can use various forms of influence strategies[3] to achieve its desired flexibility from its suppliers. For example, Chang and Huang (2012) find that the use of a "request strategy" (e.g., asking suppliers to reduce their prices without mentioning any specific consequences) by the focal firm harms the suppliers' willingness to accommodate rush and special orders by adjusting the delivery dates. Chu et al. (2012) show that the use of the "promise strategy" (e.g., vows to offer future purchase priority), "threat strategy" (e.g., threats to reduce the purchase quantities), and "legalistic pleas strategy" (e.g., issuing warnings of legal action) can positively affect supplier flexibility. The current research aims to extend the literature in this latter category by addressing three major limitations within previous research.

First, the influence strategies represent the "means" that the focal firm uses to exert power over its suppliers (Boyle et al., 1992; Johnston et al., 2018). Few studies explore the direct effects of power on suppliers' behaviour concerning flexibility (e.g., Terpend and Ashenbaum, 2012). This insight is important because a specific kind of power may be considered a basis for various influence strategies. For example, Venkatesh et al. (1995) find that the focal firm's reinforcement power allows it to implement the requests, promises and threats strategies. Without delving deeper into understanding the application of power to influence suppliers' flexible behaviour, researchers' conclusions may over-generalise the benefits of influence strategies.

[3] According to Frazier and Summers (1984), there have six primary forms of influence strategies: the *requests strategy* (the focal firm tells its suppliers to act in specific ways without providing an explanation), *promises strategy* (the focal firm offers specific rewards if its suppliers confirm to its stated desires), *threats* strategy (the focal firm threatens its suppliers with future negative sanctions if they fail to fulfil a special request), *legalistic pleas strategy* (the focal firm contends that legal contracts or agreements require the compliance of suppliers), *information exchange strategy* (the focal firm provides general information related to issues to affect its suppliers' perspectives without stating its requests), and *recommendations strategy* (the focal firm describes how its suppliers could benefit from achieving the specific desired outcomes).

Second, the previous literature also suggests that the effective (or ineffective) use of influence strategies in exercising the focal firm's power to affect its suppliers' behaviour requires certain conditions (Johnston et al., 2018). Shared goals refer to the bilateral vision of achieving outcomes (Li et al., 2010). The prior research suggests that the presence of shared goals between the focal firm and its suppliers can affect how they view the value of cooperation versus competition (Chang and Huang, 2012; Lai, 2009), which will ultimately affect the application of power in their relationships. However, no studies have examined how shared goals affect the use of coercive versus legal-legitimate powers in achieving supplier flexibility.

Third, when studying how the focal firm uses influence strategies to apply its power to affect its suppliers' flexible behaviour, researchers mainly focus on the context of dyadic SC relationships (e.g., Chu et al., 2012; Johnston et al., 2018). Nevertheless, in today's business environment, customers are increasingly demanding more complex products. This leads to the formation of hub-and-spoke SC relationships, which consist of a single focal firm (the hub) engaging with multiple suppliers (the spokes) at the same time (i.e., one-to-many), compared to the one-to-one based dyadic SC relationship. Such a structure enables the focal firm to access diverse, complementary resources simultaneously from different suppliers (Linden et al., 2009; Liu and Rong, 2015). Therefore, the focal firm can accomplish complicated tasks (e.g., developing complex products) more effectively through hub-and-spoke SC relationships than dyadic SC relationships. Furthermore, as the focal firm develops substantial links with multiple suppliers, orchestrating their activities and enjoying direct access to the final customers, it becomes a more powerful organisation than an individual supplier in a hub-and-spoke SC relationship (Guerrieri and Pietrobelli, 2004; Mayer, 2013). In comparison, the power distribution in a dyadic SC relationship is relatively equal. Thus, the previous findings on the relationship between influence strategies and supplier flexibility

in dyadic SC relationships (e.g., Chang and Huang, 2012; Chu et al., 2012) may not be fully transferable in the hub-and-spoke SC setting.

"Insert Figure 1 Here"

Against this background, we build on the rationale of resource-dependency theory (RDT) and transaction-cost economics (TCE) to develop a conceptual framework (see Figure 1) and test it by analysing dyadic survey data from a large construction contractor and its 100 suppliers in Indonesia. We aim to advance the relevant literature in several ways. In particular, we distinguish between the coercive and legal-legitimate power that the focal firm exercises through its influence strategies and examine their impact on supplier flexibility. In doing so, we advance the studies of influence strategies and supplier flexibility (e.g., Boyle et al., 1992; Chu et al., 2012; Johnston et al., 2018). We also contribute to this research stream by empirically testing how the goals shared by the focal firm and its suppliers influence the effectiveness of different kinds of power in driving supplier flexibility. Our final contribution is contextual – a hub-and-spoke SC relationship (Guerrieri and Pietrobelli, 2004; Mayer, 2013), an underdeveloped context for understanding the factors that help a focal firm to promote flexibility within its suppliers. Overall, we advance the applicability of RDT and TCE (Hillman et al., 2009; Williamson, 1979) to study the application of power and its contingency in a hub-and-spoke SC relationship. We combine disparate theoretical logics to explain the joint effects of power and shared goals on supplier flexibility in such a context.

THEORIES AND HYPOTHESES

Literature Background

Power means the focal firm's ability to control and enforce its desires on its suppliers (Handley and Benton, 2012; Reimann and Ketchen Jr, 2017). The use of influence strategies allows the focal firm to apply its power and affect its suppliers' operations-related decisions

(Frazier and Summers, 1984), such as its flexibility (Boyle et al., 1992; Johnston et al., 2018). This implies that power is the base of the focal firm's influence strategies, and its application allows the focal firm to affect supplier flexibility. The prior research on this topic focused mainly on examining the relationship between the different forms of influence strategies and supplier flexibility (e.g., Chang and Huang, 2012; Chu et al., 2012), and few studies probed more deeply into the effect of power on supplier flexibility under the scope of influence strategy implementation. Notably, a study by Terpend and Ashenbaum (2012) found a positive relationship between legitimate power[4] and supplier flexibility in changing order volume and the mix of order volume.

Another consideration is that the studies on how the focal firm can influence its suppliers' flexibility assume that the relationship between the two is dyadic (one to one) in nature, where the distribution of power is relatively equal. However, in the context of hub-and-spoke SC relationships (one to many), the focal firm assumes managerial responsibility and has substantial links with the final customers (Guerrieri and Pietrobelli, 2004; Mayer, 2013). Consequently, the focal firm is the more powerful party in its relationships with its suppliers. According to the literature on power in SC, the more powerful party will tend to exploit its power over others for its own benefit (Reimann and Ketchen Jr, 2017). This implies that the focal firm in a hub-and-spoke SC relationship is likely to exercise its power to influence its suppliers differently compared to a dyadic relationship. At the same time, the weaker party (e.g., suppliers) in a (hub-and-spoke) SC relationship with power asymmetry may also react to the focal firm's request differently than in a power symmetry (dyadic) SC relationship. Thus, our understanding of influence strategies and application of power may not fully apply in the context of hub-and-spoke SC relationships. Against this background,

[4] Legitimate power means that the focal firm has a legitimate right to influence its suppliers and that its suppliers have an obligation to accept this influence (Terpend and Ashenbaum, 2012). For example, suppliers believe that the focal firm (its customer) is always right and entitled to makes certain demands of them.

the current research attempts to improve our understanding of how the focal firm can apply its power to influence supplier flexibility in hub-and-spoke SC relationships.

This research focuses on a supplier's perception of the coercive and legal-legitimate power used by the focal firm. Research often categorises these two kinds of power as "mediated power[5]", that emphasises using a competitive approach to bring about some direct action and is often used by the more powerful party in SC relationships (Reimann and Ketchen Jr, 2017). There is a certain degree of overlap between coercive and legal-legitimate power because they both place great emphasis on the focal firm's ability to "punish"[6] its suppliers in the case of non-compliance with its requests (Benton and Maloni, 2005; Reimann and Ketchen Jr, 2017). However, these kinds of power differ fundamentally concerning how they influence suppliers. Coercive power focuses on warning of future negative sanctions or punishments if suppliers fail to comply with the focal firm's wishes (Handley and Benton, 2012). For example, the focal firm may threaten to withdraw future business unless its suppliers agree to change their delivery schedule. Legal-legitimate power involves using contractual agreements to steer the compliance of the focal firm's suppliers (Benton and Maloni, 2005). For example, the focal firm may seek its suppliers' agreement to change the order quantity by threatening legal action. Despite recognising these differences, researchers still examine the impact of the focal firm's coercive and legal-legitimate power under the

[5] Researchers often classify different kinds of power into two groups. On the one hand, non-mediated power is not explicitly exercised. Instead, the influence is achieved by the perceptions of suppliers in terms of beneficial assistance when collaborating with the focal firm (Reimann and Ketchen Jr, 2017). *Expert power* (suppliers' perception that the focal firm possesses expertise concerning specific information or knowledge), *referent power* (suppliers' perception of their desire/pride to be associated with the focal firm), and *legitimate power* (see footnote 4) are the three most common kinds of non-mediated power. On the other hand, mediated power relies on extrinsic forms of pressure issued by the focal firm to gain compliance by its suppliers (Handley and Benton, 2012; Terpend and Ashenbaum, 2012): namely, *coercive power* (threatening suppliers with poor treatment in the case of noncompliance), *legal-legitimate power* (using contractual agreements and legal threats in the case of noncompliance), and *reward power* (promising specific future rewards in exchange for suppliers' compliance with the focal firm's stated desires).

[6] Compared to coercive and legal-legitimate power, reward power relies more on the focal firm's ability to provide incentives and rewards in the case of non-compliance with requests (Reimann and Ketchen Jr, 2017; Terpend and Ashenbaum, 2012); for example, the focal firm may promise favourable treatment in return for the fast delivery of materials.

category of mediated power (Benton and Maloni, 2005; Handley et al., 2019), and fail to distinguish their different roles explicitly in affecting suppliers' behaviour. This research seeks to explore in greater depth how the suppliers' perception of the focal firm's use of coercive versus legal-legitimate power can affect their flexibility.

Furthermore, while the use of power by a focal firm can influence its suppliers' operations-related decisions, this is not without contingency. We consider shared goals as the contingent factor. Shared goals are crucial elements that unite a focal firm and its suppliers in a hub-and-spoke SC relationship. These goals significantly influence how both parties view the value of cooperation in supporting their individual and joint competitive position in the marketplace (Guerrieri and Pietrobelli, 2004; Liu et al., 2019; Liu and Rong, 2015). As a result, the levels of shared goals perceived by the suppliers can potentially affect how they react to the focal firm's use of power to influence their operations-related decisions. Thus, shared goals can potentially affect how a focal firm uses coercive and legal-legitimate power to affect supplier flexibility. The following section will develop detailed hypotheses to highlight the relationship among powers, shared goals, and supplier flexibility in a hub-and-spoke SC relationship. We will anchor our arguments on RDT and TCE.

RDT and Coercive Power

RDT recognises that the survival of an organisation (A) hinges on its ability to obtain critical resources that are valuable and difficult to imitate in the external environment (Casciaro and Piskorski, 2005; Hillman et al., 2009). If a second organisation (B) controls critical resources, A will seek to collaborate with B to access these. In this situation, A depends on B to provide these resources. Central to this dependency relationship is the concept of coercive power, which is based on control over critical resources (Handley and Benton, 2012). As B controls critical resources in this coalition, A will recognise B as having

greater coercive power. Thus, B can use such power to threaten A that it will withhold these resources if A fails to comply with its wishes. We build on these insights and propose that coercive power affects supplier flexibility in a hub-and-spoke SC relationship.

In this SC relationship, the focal firm offers finished products to the final customers. Its suppliers provide the necessary inputs to support the manufacturing and distribution of the products. Thus, the focal firm exerts control over a critical resource – direct access to the final customers (Linden et al., 2009). Such a resource is valuable and difficult to imitate because an individual supplier cannot directly sell inputs to the final customers. It needs to collaborate with the focal firm in order to gain access to the final customers by providing inputs to the focal firm (Linden et al., 2009; Liu and Rong, 2015). In this setting, the supplier will perceive that the focal firm has coercive power in this relationship. As a result, the focal firm can pressure the supplier to act flexibly by exercising coercive power. For example, the focal firm can threaten its suppliers by suggesting that a failure to deliver the inputs flexibly could result in a loss of future orders from the focal firm, thereby limiting the suppliers' opportunities to access the final customers. In such a situation, suppliers are more likely to make changes in order to accommodate the focal firm's special requests. Hence, coercive power positively affects supplier flexibility.

However, this positive effect is unlikely to persist. According to RDT, A will take action to manage its dependence on B, which controls critical resources when perceiving that the levels of dependence are high (Drees and Heugens, 2013; Hillman et al., 2009). This perception can be caused by a high level of power imbalance (A's operations-related decisions are overly influenced by B in their relationship) (Casciaro and Piskorski, 2005). In this situation, A will attempt to alter its dependence on B by taking various actions (e.g., diversification, etc.) to produce new patterns of dependence. Adapting these insights to suit this study's context, we argue that the effectiveness of coercive power is limited.

If a supplier perceives that the focal firm has high levels of coercive power, it may start to minimise its dependence on the focal firm. In a hub-and-spoke SC relationship, an individual supplier is free to offer inputs to multiple hubs (firms), each of which has access to different customer groups (Guerrieri and Pietrobelli, 2004; Williamson and De Meyer, 2012). Thus, when suppliers perceive that the focus firm is using high levels of coercive power to pressure them to comply with a request for flexibility, they may reduce their dependence by providing inputs to other hubs (the focal firms in different hub-and-spoke SC relationships). This decreases the supplier's commitment to respond flexibly to the focal firm's changing needs because they can access different final customer groups through developing other hub-and-spoke SC relationships. Thus, the positive effect of coercive power on supplier flexibility will start to decrease as the perception of the focal firm's coercive power level continues to rise. Therefore, we propose that an increase in coercive power improves supplier flexibility only to a certain point, beyond which a stronger perception of the coercive power becomes detrimental to suppliers' efforts to accommodate the focal firm's changing demands. Hence, the effect of coercive power is most prominent at a moderate level.

Hypothesis 1: Coercive power has an inverted-U-shaped effect on supplier flexibility.

TCE and Legal-Legitimate Power

TCE explains how parties organise their exchange activities by considering asset specificity and governance mechanisms (Williamson, 1979). Asset specificity refers to the specialised elements that are important to the exchange activities but have little or no other use outside that particular exchange relationship (Rindfleisch and Heide, 1997). A safeguarding problem arises when such elements are held by one of the exchange parties (C), which fears that the other party in the exchange relationship (D) may act opportunistically (focusing on its own benefits instead of the group's benefits in joint projects). Therefore, C

often uses contractual agreements as governance mechanisms to safeguard these elements by closely monitoring and influencing D's behaviour (Williamson, 1979). Legal-legitimate power, from this perspective, reflects D's perception of E's ability to make use of contractual agreements for this purpose (Handley et al., 2019). Thus, C can exercise its legal-legitimate power to pressure D into complying (e.g., contributing more resources and efforts to complete joint projects). We apply these insights to argue the relationship between legal-legitimate power and supplier flexibility in a hub-and-spoke SC relationship.

More precisely, we propose that a focal firm that uses a low to moderate level of legal-legitimate power to pressure its suppliers into complying will reduce supplier flexibility. In the context of the hub-and-spoke SC relationship, the focal firm orchestrates SC activities to guarantee the assembly and delivery of the finished products to final customers (Guerrieri and Pietrobelli, 2004; Mayer, 2013). Creating such coordinated processes, in which suppliers work jointly, revolving around the focal firm to execute SC transactions, requires significant relationship-specific investment in fostering business relationships and developing managerial capabilities. Therefore, the processes can be considered a specific asset because they have no alternative use. To safeguard them, the focal firm uses legally binding contracts that spell out the obligations and roles of its suppliers and monitor their behaviour related to coordinated processes within hub-and-spoke SC (Williamson and De Meyer, 2012). The level of legal-legitimate power depends on the organisation's capacity to dictate the wording of the contractual agreements and their enforcement (Han et al., 2014), which often involves committing further resources (i.e., legal fees) to take legal action.

When suppliers perceive that the focal firm's legal-legitimate power is of a low or moderate level, they will doubt whether the focal firm can enforce the contractual agreement effectively to safeguard the coordinated processes within hub-and-spoke SC. This will reduce the suppliers' trust in others in the SC, potentially leading them to act in a self-serving

manner by allocating more resources to their own projects rather than the joint projects organised by the focal firm. In such a perceived low trust environment, the supplier is less likely to behave flexibly when responding to the focal firm's specific requests concerning joint projects because high levels of supplier flexibility require suppliers to act less opportunistically by contributing more resources to joint projects (Liao et al., 2010). Moreover, the use of legal-legitimate power in a perceived low trust environment will stimulate suppliers' retaliatory actions and decrease their commitment to the SC relationship (Heide et al., 2007). In such a situation, suppliers' perception that the focal firms are using a higher level of legal-legitimate power (rather than low to moderate levels) will make them less likely to accommodate the focal firm's changing demands. Hence, legal-legitimate power has an initially negative impact on supplier flexibility.

However, when suppliers perceive that the focal firm has high levels of legal-legitimate power, they will feel more confident that the focal firm will be more willing to allocate more resources to enforcing the contract, and that the consequences of any contractual breach will be considerable (Poppo and Zenger, 2002). This will increase suppliers' trust in others in the hub-and-spoke SC when making operations-related decisions, due to their belief that the focal firm can enforce the contractual agreement concerning coordinated processes, which means that other members of the SC are less likely to act opportunistically. In such a perceived high trust environment, the supplier is more likely to allocate more resources to joint projects by flexibly responding to the focal firms' special requests. Furthermore, as all suppliers devote more resources and efforts to a hub-and-spoke SC relationship, the more effective the coordinated processes will become to complete joint projects. This will make the coordinated processes irreplaceable and increase the switching costs for suppliers, which subsequently creates a situation where suppliers become locked-in to the coordinated processes and become dependent on the focal firm for organising their

activities in hub-and-spoke SC (Rindfleisch and Heide, 1997). Therefore, suppliers may become even more likely to comply with the focal firm's requests. In short, when the focal firm intensifies its level of legal-legitimate power beyond a certain point, suppliers' efforts to respond flexibly to its changing demands will increase. In summary, we expect that a medium level of legal-legitimate power will negatively affect supplier flexibility but, beyond a certain level, the effect of legal-legitimate power on supplier flexibility becomes positive.

Hypothesis 2: Legal-legitimate power has a U-shaped effect on supplier flexibility.

The Moderating Roles of Shared Goals

Drawing on RDT, we expect shared goals to play a moderating role in the inverted-U relationship between coercive power and supplier flexibility in a hub-and-spoke SC relationship. According to RDT, the influence of an organisation's coercive power on another organisation's operations-related decisions will be affected by their patterns of dependence (Drees and Heugens, 2013; Hillman et al., 2009). Shared goals that promote resource transfer between organisations will affect the patterns of dependence within their relationship (Lai, 2009). Thus, the presence of shared goals may influence the effectiveness of coercive power in a business relationship. Specifically, when the level of shared goals between the focal firm and its suppliers is high, the suppliers are more likely to receive further resource transfer (e.g., technological support, etc.) from the focal firm. This subsequently enhances the suppliers' benefits, encouraging them to continue their relationship with the focal firm. In such a situation, suppliers are more likely to comply when the focal firm exercises its coercive power to demand suppler flexibility, because the failure to respond flexibly to the focal firm's changing needs could result in the loss of this increasingly important business relationship. Furthermore, shared goals also enhance suppliers' connection to the focal firm through aligning the operational processes (Guerrieri and Pietrobelli, 2004; Liu and Rong,

2015). Such a connection also improves suppliers' ability to respond to the focal firm's special supply requests (Liao et al., 2010). Combining the above discussions, we argue that shared goals intensify the positive effect of coercive power on supplier flexibility.

RDT also points out that excessive resource dependency on a business partner will trigger an organisation's actions (i.e., diversification, developing links to others, etc.) to bolster its autonomy (Casciaro and Piskorski, 2005; Hillman et al., 2009). This is especially the case when the organisation perceives strong coercive pressure from its business partner to perform particular actions (Drees and Heugens, 2013). Building on these insights, the use of high levels of coercive power by the focal firm to influence its suppliers' operations-related decisions regarding flexibility will motivate suppliers to seek the freedom to make decisions without outside interference (Drees and Heugens, 2013). Shared goals further promote exchange-related activities (i.e., information exchange, joint projects, etc.) between organisations (Lai, 2009; Li et al., 2010), thereby intensifying the degree of dependence. As a result, suppliers will make extensive efforts to restore their autonomy, which will subsequently reduce the effectiveness of the focal firm's coercive power in affecting its suppliers' flexibility. Furthermore, as shared goals promote information exchange, suppliers possess valuable information (i.e., operational procedures, trade secrets, etc.) concerning the operations of the focal firm that manages the hub-and-spoke SC (Liu and Rong, 2015). Suppliers' possession of this information makes them more attractive business partners in the eyes of another focal firm belonging to a competing hub-and-spoke SC. This will improve suppliers' bargaining position and enable them to challenge the focal firm's intensified threat to withhold resources if they fail to comply with its requests to provide inputs flexibly (i.e., supply flexibility). As a result, the supplier's efforts to accommodate the changing needs of the focal firm will decline. Combining the above discussion, we suggest that suppliers are less likely to comply with the focal firm's request for flexibility when it uses a moderate to

high level of coercive power in the situation where shared goals are present in a hub-and-spoke SC relationship. Therefore, we predict that shared goals strengthen the inverted U-shaped relationship between coercive power and supplier flexibility.

Hypothesis 3: The inverted U-shaped effect of coercive power on supplier flexibility is stronger (steeper) when the levels of shared goals are high, and vice versa.

Drawing on TCE, we expect shared goals to moderate the U-shaped relationship between legal-legitimate power and supplier flexibility in hub-and-spoke SC relationships. The shared goals of the focal firm and its suppliers act as a type of hybrid, relationship-based governance mechanism (relational contract) that focuses on developing closer ties between the exchange partners (Li et al., 2010; Williamson, 1979). From the perspective of TCE, the presence of relational contracts can influence the functions of legal contracts in safeguarding specific assets used to support exchange activities (Poppo and Zenger, 2002; Rindfleisch and Heide, 1997). That is, the work of relational contracts can either replace (substitution effects) or compensate for (complementary effects) the function of legal contracts under different situations (Huber et al., 2013; Poppo and Zenger, 2002). We apply these insights to this study's context to argue that shared goals amplify the initial adverse effects of legal-legitimate power on supplier flexibility. When suppliers doubt that the focal firm can enforce the contractual agreements to safeguard the coordination processes within a hub-and-spoke SC, the presence of shared goals can replace the function of legal contracts when the focal firm is perceived to have a low to moderate degree of legal-legitimate power. Shared goals promote a mutual understanding between the focal firm and its suppliers (Li et al., 2010). As the suppliers understand the focal firm's position in using coordination processes to obtain joint benefits, they will become more likely to accommodate the focal firm's requests to achieve collective goals. In such a situation, suppliers will be less likely to make operations-related decisions based on contractual agreements and rely more on the goals that they share

with the focal firm. As a result, the effect of perceived legal-legitimate power on supplier flexibility will further decrease. To sum up, we expect that suppliers will become even less likely to respond to the focal firm's request to provide inputs flexibly when facing a low to moderate level of legal threat when a high level of shared goals exists.

At the same time, we also argue that the positive effect of a moderate to high level of legal-legitimate power on supplier flexibility can be enhanced by the presence of shared goals. According to TCE, legal and relational contracts have unique strengths, and one can compensate for the weaknesses of the other to influence suppliers' behaviours when both are at higher levels (Huber et al., 2013). When suppliers perceive that the focal firm can make use of legal contracts to safeguard the coordination processes (higher levels of legal-legitimate power), they become more likely to respond to the focal firm's special requests flexibly because they believe that others in the hub-and-spoke SC will also commit to joint projects. The presence of high levels of shared goals will intensify such effects. Because legal contracts are often incomplete due to the limited rationality of managers and the uncertainty of the outcome when drafting them (Williamson, 1979), this raises potential conflict between the parties that may lead to opportunistic behaviour. In such a situation, shared goals (as relational contracts), that promote information exchange and joint problem solving (Li et al., 2010; Liu and Rong, 2015), can help to resolve the conflicts. In other words, a high level of shared goals can compensate for the use of higher levels of legal-legitimate power to influence suppliers' behaviours, so that suppliers will become more likely to comply with the focal firm's request for flexibility in supplying input materials to it. Combining the above discussion, we predict that shared goals strengthen the U-shaped relationship between legal-legitimate power and supplier flexibility.

Hypothesis 4: The U-shaped effect of legal-legitimate power on supplier flexibility is stronger (steeper) when the levels of shared goals are high, and vice versa.

METHOD

Empirical Setting

To test our hypotheses, we conducted a dyadic survey of a large construction contractor based in Indonesia and its suppliers. Our unit of analysis is the individual supplier that offers inputs (e.g., construction materials, basic components, services, etc.) to the large construction contractor. We selected the construction industry in Indonesia as our empirical setting for the following reasons. First, a large construction contractor (the focal firm) in Indonesia engages with multiple suppliers simultaneously to form hub-and-spoke SC relationships. According to the Indonesian Public Works Ministry, a typical "large" construction company in Indonesia handles over a combined value of £5.2 million (~ IDR[Indonesian Rupiah]100 billion) worth of projects annually, in comparison with "medium" (£128,500/IDR2.5 billion ~ £5.2 million/IDR100 billion) and "small" (<£128,500/IDR2.5 billion) companies. Indonesia has one of the fastest urbanisation growth rates globally (The World Bank, 2016). The rapid urbanisation in Indonesia has increased the opportunities for infrastructure and property development. In Indonesia, large construction contractors have substantial links to multiple suppliers and direct access to big organisational customers (e.g., governments, real estate developers, etc.), which allows them to acquire the development rights for construction projects. These construction projects (e.g., government or commercial infrastructure, residential and commercial estates, etc.) are complex and require large construction contractors to enter SC partnerships with various suppliers to access a wide range of inputs to complete them.

Second, large construction contractors in Indonesia often adopt a mixture of formal contracts and other informal approaches (e.g., power, shared goals) to manage their suppliers, as revealed during our conversations with managers from the focal firm during the pilot

study. For example, in our pilot study, an executive suggested that he would hint to a supplier that, unless it complied with his request to change the delivery time, he would not permit it to participate in the next project (the use of coercive power). Another executive indicated that he sometimes mentions to the interior contractor the legal consequences if the contractor fails to fulfil his special requests (the use of legal-legitimate power). In terms of shared goals, a site manager provided a good example of where the suppliers and the contractor have the same objective to fulfil their obligations according to the agreed master schedule for the project. Third, a typical project organised by a large construction contractor often involves different suppliers supporting many interrelated tasks. A minor delay in completing the key tasks can affect the scheduling of other tasks. Therefore, large construction contractors often demand that suppliers be sufficiently flexible to handle these unforeseen challenges (Gosling et al., 2010).

Our study focused on a hub-and-spoke SC relationship between a single focal firm (a construction contractor) and its suppliers. To obtain data, we initially contacted the three largest construction contractors in Indonesia. One construction firm (for confidentiality, let us call it AAA) agreed to participate in our research. AAA's construction operations include roads, tolls, bridges, airports, and residential, commercial, and industrial buildings. At the time of the data collection, AAA had 331 suppliers. AAA does not rank its suppliers at all. In selecting suppliers for a specific construction project, AAA will conduct an initial screening process based on a set of criteria related to the project and then invite the shortlisted candidates (suppliers) to bid for the work. These suppliers are diverse and supply different inputs to meet the requirements of the construction project. Given the construction project's complexity, AAA may constantly make adjustments to meet the project's quality and product delivery deadlines. This requires the suppliers' compliance in terms of being flexible.

Measurements and Data Collection

We adopted measurement items from previous studies and assessed them using five-point Likert scales.[7] To obtain dyadic responses, we divided the question items into two surveys (see Appendix 1). The "focal firm survey" (a questionnaire completed by AAA) assessed the dependent variable – *supplier flexibility*. Supplier flexibility refers to the extent to which a supplier can meet the focal firm's expectations and fulfil its special requests. We adopted and modified the measurement scales (three items) from Malhotra and Mackelprang (2012). The "supplier survey" (a questionnaire designed for AAA's suppliers) included variables such as power, shared goals, and control variables. Coercive power refers to the extent to which an organisation threatens its suppliers with poor treatment in the case of non-compliance, while legal-legitimate power refers to the extent to which an organisation make use of contractual agreements and legal threats in the case of supplier non-compliance. We adopted and modified the measurement items from Handley and Benton (2012) to assess suppliers' perceptions of *coercive power* and *legal-legitimate* power. We measured both constructs using three items each. Shared goals refer to the extent to which the exchange parties have a bilateral understanding, approach, and vision concerning achieving the tasks and outcomes. To measure the *shared goals*, we adopted and modified the four-item measurement from Li et al. (2010).

To account for other factors that may affect supplier flexibility, we employed several control variables. We controlled for *firm size* and *firm age*. In this study, firm size refers to the number of people employed by a supplier, while firm age refers to the number of years for which a supplier has operated. Prior studies recognise that an organisation's resource reserve may affect its efforts to provide inputs flexibly (e.g., Holweg, 2005). In the context of our study, this implies that a supplier with more resources is more capable of responding to

[7] Five-point Likert scales: -1 ("disagree"); -2 ("strongly disagree"); 0 ("neutral"); 1 ("agree"); 2 ("strongly agree").

the focal firm's changing needs flexibly. These two variables often serve as proxies for assessing an organisation's resource reserves (e.g., capital reserves, capabilities, industry experience, etc.). We control for *relationship length*. Previous research also indicates that an organisation's relationship quality with its business partner may affect its flexibility (Liao et al., 2010; Omar et al., 2012). Relationship length is an important proxy for accessing the level of relationship quality, reflecting the importance of the business relationship to a certain degree (Lee et al., 2015). Furthermore, the relationship duration (relationship length) also affects whether the exchange parties can return favours (or penalties), which affects a firm's efforts to accommodate its partner firm's special requests (Han et al., 2014). To assess the relationship length, we asked the suppliers to indicate the number of years for which they have worked with AAA (Handley and Benton, 2012). Log transformation was conducted regarding firm size, firm age, and relationship length (Hair et al., 2010, p. 82). Furthermore, we controlled for *business scope* because the flexibility of suppliers' actions may be affected by the types of inputs that they provide (Han et al., 2014; Liao et al., 2010; Malhotra and Mackelprang, 2012). We dummy coded different business scopes according to the supplier's inputs to the construction projects (i.e., foundation, structure, road, interior & exterior, mechanical & electrical, and landscapes).

Finally, we controlled for competitive intensity and market turbulence because previous studies have indicated that business environmental uncertainty can influence supplier flexibility (Han et al., 2014; Sánchez and Pérez, 2005). To assess the competitive intensity (the degree of competition in the industry), we initially adopted three-item measures from Wang et al. (2013). To assess the market turbulence (the level of instability within the customer preferences), we initially adopted three-item measures from Stock et al. (2013). Prominent practitioners in the construction industry (including the executives and managers of AAA and the managers of several of its suppliers) suggested that some of the measurement

items for these two constructs did not apply to their situation. They recommended that we use one item each, which is the most relevant to their situation, from our proposed questionnaire to assess the competitive intensity and market turbulence. Thus, we used a single item – "there are many competitors in our industry" – to assess the competitive intensity and a single item – "major changes frequently occur in the area of the products/services that our competitors offer" – to assess the market turbulence. We used a five-point Likert scale to assess these two items.[8]

The questionnaire was developed in English. With the help of a senior manager from AAA, one author read and back-translated the questionnaire into Bahasa Indonesia (the Indonesian language spoken where the data collection took place). Both of them are fluent in English and native speakers of Bahasa Indonesia. Several managers from AAA and its suppliers then pilot tested the translated questionnaire, and the researchers compared and re-checked the suggested revisions, leading to the final version. We adopted a two-step data collection process. In step 1, AAA distributed the final version of the "supplier survey" to its suppliers. The survey was conducted via paper versions, phone calls, and emails. At the time of the data collection, there were 331 registered, active suppliers on AAA's system. We employed freedom of participation to secure the best, most honest response from active, willing supplier participants. In the end, we successfully collected 100 completed surveys, giving a response rate of 30.2%. In Step 2, AAA's SC managers, responsible for dealing with these 100 suppliers, completed the "focal firm" survey. The entire data collection process took place in the 1st quarter of 2019 (a three-month period). To assess the nonresponse bias, we compared early and late respondents' answers to the survey questions. There were no significant differences between these in terms of the key firm characteristics ($t = 0.410$, $p =$

[8] Five-point Likert scales: -2 ("strongly disagree"); -1 ("disagree"); 0 ("neutral"); 1 ("agree"); 2 ("strongly agree").

0.683 for firm size; t = 0.652, p = 0.516 for firm age). Thus, the probability of nonresponse bias is minimal.

Validity and reliability

The confirmatory factor analysis (CFA) model with four factors in the hypothesised model exhibits an adequate fit (Chi-square [X^2]= 86.121; degree of freedom [*df*] = 48; X^2/df = 1.794; p-value < 0.001; Comparative Fit Index [CFI] = 0.950; Root Mean Square Error of Approximation [RMSEA] = 0.080). We also investigated the residuals' matrix and modification indices to detect any model misspecification. The residual matrix captures any discrepancy between the restricted covariance matrix (the hypothesised model) and sample covariance matrix, and standardised residuals among the measurement items (matrix) above 2.58 could be viewed as a possible model misfit (Byrne, 2016, p. 107). Values of the modification indices, reflecting "the extent to which the hypothesised model is appropriately described", above ten indicate a possible model misfit (Byrne, 2016, p. 103). In examining the standardised residual matrix, only two covariances (out of the 78) exceed the 2.58 threshold value, and all of the modification indices are below ten. Moreover, the other fit indices, such as the CFI (above 0.900) and RMSEA (below 0.100), indicate an adequate fit for our CFA module (Byrne, 2016, p. 96). In sum, we conclude that our CFA model exhibits an adequate degree of fit.

To investigate the convergent validity of our measures, we first examined the size of the factor loading. As Appendix 1 shows, all except three of the standardised loading estimates are above 0.700. We also followed the recommendation of Hair et al. (2010, p. 709) to drop any item (from the "shared goals" measurement) whose standardised loading estimate was below 0.500. We then calculated the average value extracted (AVE) (see Table 1). The value of the AVE for each construct exceeds the usual 0.500 benchmark (Hair et al., 2010, p.

709). Both results demonstrate adequate convergent validity among the item measures. To test the reliability of our measures, we calculate the composite reliability (CR) (see Table 1). The value of the CR for the construct exceeds the usual 0.700 benchmark, which demonstrates the existence of adequate reliability among the item measures (Hair et al., 2010, p. 710). We further assess the discriminant validity of our measures in two ways. First, we find that the AVE square root of each construct is greater than the inter-construct correlations. Second, we conduct an X^2 different test between the constrained (fixed correlation) and the unconstrained model (correlation estimated freely). The X^2 of the constrained model is significantly worse than that of the unconstrained model ($\Delta X^2 = 53.044$, $p < 0.001$). Thus, our measures possess adequate discriminant validity.

All except one correlation among the main variables in our hypothesised model are below 0.300 (see Table 1), which indicates little if any correlation. We conducted additional analysis to assess whether the high correlations between coercive and legal-legitimate power (0.602) affected our results. First, we examined the variance influence factor (VIF). The result shows that the VIF related to these two variables is 1.075, which is well below the cut-off value (VLF = 10) (Hair et al., 2010). Therefore, we concluded that multicollinearity was not a severe problem. Second, we followed the approach suggested by Bagozzi and Warshaw (1990) to assess whether the high correlations among the variables affecting the degree of discrimination validity. The degree of discrimination validity is adequate when "each correlation is less than 1.000 by an amount greater than twice its respective standard error". Applying this insight to our data analysis, the correlation between coercive power and legal-legitimate power less than 1.000 is equal to 0.398 (i.e., 1.000 – 0.602 = 0.398), which is more than twice the respective standard error 0.158 (i.e., $SE_{corr} = 0.079$; 2 x 0.079 = 0.158). As a result, we conclude that there is no problem regarding discrimination validity.

"Insert Table 1"

To mitigate common method variance (CMV), we obtained dyadic responses from AAA and its suppliers. Furthermore, we also used multiple statistical remedies to rule out potential CMV. First, we employ Harman's single-factor test to load all measurement items in a single factor (Hair et al., 2010). The results indicate that this single factor did not explain the majority of the variance (38.365%). Second, we employ the CFA marker technique (Williams et al., 2010). We select *knowledge depth* as a marker variable. Knowledge depth refers to the thoroughness of a firm's knowledge and technical expertise within its specialised fields. We adopted and modified a three-item measurement ("*we have a thorough understanding and experience of our current customers"; "we have accumulated in-depth knowledge of the key market segment"; and "we have thorough technical knowledge and skills within our specialised domain")* from Zhou and Li (2012). A comparison of the Baseline model with the Method-C, Method-U, and Method-R models indicated that the presence of CMV will not bias the relationship among the substantive variables. Both results suggested that CMV did not pose a severe threat.

ANALYSIS AND RESULTS

Main Findings

Hypothesis 1 posits that coercive power has an inverted-U-shaped effect on supplier flexibility. Coercive power relates negatively to supplier flexibility (Model 2: $\beta = -0.123$, $p < 0.100$), and the quadratic term exhibits a significant negative relation (Model 2: $\beta = -0.117$, $p < 0.050$). The results indicate that the relationship between coercive power and supplier flexibility is nonlinear. To examine this relationship further, we plot this relationship in Figure 2a. The graph shows that coercive power has an inverted-U-shaped effect on supplier flexibility, consistent with our prediction in Hypothesis 1. Thus, we confirm Hypothesis 1. Hypothesis 2 posits that legal-legitimate power has a U-shaped effect on supplier flexibility.

Legal-legitimate power relates negatively to supplier flexibility (Model 2: $\beta = -0.093$ n.s.), and the quadratic term exhibits a significant positive relation (Model 2: $\beta = 0.152$, $p < 0.050$). These results also indicate that the relationship between legal-legitimate power and supplier flexibility is nonlinear. Following the same approach, we plot this relationship in Figure 2b. The graph shows that legal-legitimate power has a U-shaped effect on supplier flexibility, consistent with our prediction in Hypothesis 2. Thus, we also confirm Hypothesis 2.

"Insert Table 2"

"Insert Figure 2"

Hypothesis 3 predicts that shared goals strengthen the inverted U-shaped relationship between coercive power and supplier flexibility by steepening the curvilinear effect. In Table 2, Model 3, the interaction between coercive power and shared goals is positive (Model 3: $\beta = 0.156$, n.s.), whereas that between the quadratic term and shared goals is negative (Model 3: $\beta = -0.024$, n.s.). These results indicate that the moderating effect of shared goals on the nonlinear relationship between coercive power and supplier flexibility is insignificant. Thus, we reject Hypothesis 3. Hypothesis 4 proposes that shared goals strengthen the U-shaped relationship between legal-legitimate power and supplier flexibility by steepening the curvilinear effect. We find that the interaction between legal-legitimate power and shared goals is negative (Model 3: $\beta = -0.227$, n.s.), whereas that between the quadratic term and shared goals is positive and significant (Model 3: $\beta = 0.218$, $p < 0.050$). These results indicate that the positive moderating effect of shared goals on the nonlinear relationship between legal-legitimate power and supplier flexibility is significant. For greater clarity, we plot the relationship in Figure 2c, which shows that the U-shaped curvilinear effect between legal-legitimate power and supplier flexibility is stronger (a steeper slope) when combined with high (vs low) levels of shared goals. Therefore, the findings support Hypothesis 4.

Post-Hoc Analysis – Endogeneity

As our data do not result from a randomised experiment, endogeneity may be a concern. We conducted a two-stage regression to alleviate potential endogeneity concerns. Following Jin et al. (2016) approach, we regress coercive and legal-legitimate power against firm size, competitive intensity, and market turbulence to obtain the residuals of the variable, which are free of the influence of resource constraint and market uncertainty. We then use the residuals of coercive and legal-legitimate power as the new independent variable. We perform the same regression analysis using these new variables. As Table 3 shows, the new results match our original results (See Table 2). Thus, endogeneity is not a concern for our study.

DISCUSSION AND CONCLUDING REMARKS

Our study makes several significant contributions. First, influence strategies represent the "means" that the focal firm uses to exert power over its suppliers (Frazier and Summers, 1984; Venkatesh et al., 1995). This study provides new insights into influence strategies research (e.g., Chang and Huang, 2012; Chu et al., 2012) by distinguishing the roles of coercive versus legal-legitimate power in affecting supplier flexibility. This distinction is important because researchers often categorise these two kinds of power as "mediated power" and examine how the overall effect of mediated power influences suppliers' behaviour and related operational decisions (Handley and Benton, 2012; Reimann and Ketchen Jr, 2017). However, despite their similarity in using "punishment" in affecting supplier behaviour, these two powers purportedly differ regarding their sources and how a supplier's operations-related decisions are affected. This research uses disparate theoretical logics – RDT and TCE – to explain the influence of coercive and legal-legitimate power on supply flexibility in a hub-and-spoke SC relationship.

From the perspective of RDT, when a supplier perceives the focal firm to have coercive power deriving from its ability to withhold critical resources (direct access to the final customers), it will become more likely to accommodate the focal firm's special requests because the supplier recognises its dependence on the focal firm. To confirm this in actual practice, we interviewed executives from AAA. A quote from an executive confirmed our reasoning:

> *"The "hard-style" [the use of coercive power] can work because a supplier wants to work for us. The development of big [construction] projects requires many skills, job precision, and attention to detail. They [the suppliers] who work with us need to comply with the job description and spec in order to continue being involved in such a project".*

However, when the supplier perceives that the focal firm's coercive power has increased beyond a certain point, it will take action to manage its dependence on the focal firm. As a result, the supplier will become less likely to respond to the focal firm's special requests flexibly. The following quotation from another executive illustrates this point:

> *"The "hard-style" can also reduce suppliers' flexibility after it reaches "the optimal, politely acceptable, appropriate point". This might make suppliers "disappear", and be reluctant to work together anymore. In fact, the unruly, harsh treatment of suppliers can prove fatal. The suppliers leave the network for good. This happens in practice".*

Furthermore, we reason that legal-legitimate power is derived from the focal firm's ability to use legal contracts to safeguard the coordination processes in hub-and-spoke SC from the perspective of TCE. When a supplier perceives that the focal firm has low to moderate levels of legal-legitimate power, it doubts that the focal firm can maintain the coordination processes, which generates low levels of trust in the focal firm and others' behaviour in the SC. This creates an environment in which the use of legal threats by the focal firm will trigger suppliers' retaliatory actions and further decrease their commitment to the focal firm. Thus, suppliers will become less flexible about accommodating the focal firm's special requests. A quote from an executive supports our explanation:

> *"If a supplier doubts that we can enforce the [legal] contract, it will not respond to our request. In fact, legal action or threats may make the situation worse because it will cost both the supplier and us unnecessarily. The use of legal action or threats will make the supplier harder to convince.*

On the other hand, the perception that a focal firm has high levels of legal-legitimate power will strengthen the supplier's belief in the focal firm's ability to use legal contracts to safeguard the coordination processes in hub-and-spoke SC and develop high levels of trust in the focal firm and others' behaviour in the SC. In such a situation, the supplier is more likely to respond to the focal firm's special requests flexibly. An executive suggests:

> *"When the supplier believes that the host firm can use a legal contract to ensure fair treatment and sound business practices [concerning suppliers' collaborative behaviour] in the SC, they will be more likely to accept our requests to change the order quantity and delivery time".*

In general, our results are consistent with our predictions. They show that the relationship between coercive power and supplier flexibility has an inverted U-shape, while the relationship between legal-legitimate power and supplier flexibility is U-shaped. In doing so, we advance the applicability of RDT (Drees and Heugens, 2013; Hillman et al., 2009) and TCE (Rindfleisch and Heide, 1997; Williamson, 1979) for analysing how different types of mediated power can affect supply flexibility in different ways.

Second, we offer new insights into the role of shared goals in the relationship between influence strategies and flexibility (e.g., Chang and Huang, 2012; Chu et al., 2012). Specifically, we test the moderating role of shared goals. We find that shared goals positively moderate the U-shaped effect between legal-legitimate power and supplier flexibility. Drawing on TCE, we reason that shared goals, as a type of relational contract, can replace and compensate for the effects of the focal firm's legal-legitimate power, as perceived by the suppliers. When a supplier perceives that the focal firm has a low to moderate level of legal-legitimate power, the function of shared goals can replace the legal contract in affecting the supplier's operations-related decisions. Alternatively, when a supplier perceives that the focal

firm has a high level of legal-legitimate power, the function of shared goals can compensate for the weaknesses of the legal contracts. Our findings show that the presence of shared goals can intensify both the negative and positive impact of legal-legitimate power on supplier flexibility. One executive reflected:

> *"If they [the suppliers] doubt that we [the host firm] will offer fair treatment and sound practices based on the contract, they will make [operations-related] decisions based on the understanding of our [joint] business objectives (shared goals). […]. If they believe that we will honour the contract, they will stick to the contract when making their decisions. With an understanding that no contract is perfect, if there is a conflict that the contract cannot resolve, our suppliers will decide on our joint objectives (shared goals)".*

This clarification is consistent with our theoretical logic and confirmed by our results. Our work advances the use of TCE for explaining how shared goals facilitate the connection between legal-legitimate power and supplier flexibility by highlighting the substitution and complementarity role of legal and relational contracts (Huber et al., 2013; Poppo and Zenger, 2002)

Nevertheless, we do not find a positive moderating effect of shared goals on the inverted U-shape between coercive power and supplier flexibility. This may be because the interconnectedness of the SC operations, generated by a high level of shared goals, improves a supplier's bargaining position (Lai, 2009). An AAA executive confirmed this:

> *"When a supplier and we can see eye to eye on many issues concerning the [construction] project, it knows what the special requests are all about and why we need to issue them. As a result, we cannot easily influence the supplier through issuing a hard-style threat [coercive power]".*

As a supplier recognises its improved bargaining position in the SC relationship, the focal firm's use of any level of coercive power is less likely to pressure the supplier into complying with special requests. Therefore, we cannot identify a stronger (steeper) inverted U-shaped effect of coercive power on supplier flexibility when the level of shared goals is high, and *vice versa*. Our finding also indicates the limitation of RDT's applicability in explaining the role of shared goals in the relationship between coercive power and supplier flexibility.

This study also discusses the influence strategies research (e.g., Boyle et al., 1992; Johnston et al., 2018; Lai, 2009) into the context of the hub-and-spoke SC relationship. Scholars assume the co-existence of power and shared goals but remain unclear about how these affect supplier flexibility in such an SC relationship. Against this background, we examine the relationship among power, shared goals, and supplier flexibility. The results extend the literature by framing the discussion around RDT and TCE to explain how the focal firm uses its various types of power in different ways to affect supplier flexibility under the condition of shared goals.

Managerial Implications

Managers must distinguish between coercive and legal-legitimate power and understand the different effects on suppliers' flexibility when supplying inputs to the focal firm. In particular, when using a relatively low to moderate level of coercive power, a focal firm can pressure a supplier into complying with its request for flexibility when supplying it with inputs. However, the supplier is likely to reject such requests if a relatively moderate to high coercive power is used. In contrast, the use of a low to moderate level of legal-legitimate power by the focal firm will reduce a supplier's efforts to respond flexibly to the focal firm's changing needs. The supplier is more likely to accommodate the focal firm's changing needs when the focal firm has a moderate to high level of legal-legitimate power. Combined, we recommend that managers use a low to moderate level of coercive power and a moderate to high level of legal-legitimate power to pressure suppliers into behaving flexibly to maximise their benefits and avoid the potential downsides associated with using these types of mediated power.

Furthermore, managers should understand the collective effect of legal-legitimate power and shared goals on supplier flexibility. More specifically, a high level of shared goals

within a hub-and-spoke SC relationship can intensify the U-shaped relationship between legal-legitimate power and supplier flexibility. A high level of shared goals, coupled with low to moderate levels of legal-legitimate power will inhibit a supplier's flexibility in supplying input materials to the focal firm. Conversely, a high level of shared goals will strengthen the positive effects of legal-legitimate power on supplier flexibility when the power is of a moderate to high level. Therefore, managers must be cautious about the level of shared goals present within a hub-and-spoke SC relationship before using legal-legitimate power to pressure suppliers into complying with their special requests.

Research Limitations and Future Research Opportunities

First, our cross-sectional, dyadic survey design does not allow us to detect causal effects. Future research in this area should consider using a longitudinal research design to overcome this limitation. Second, to account for the dynamic nature of behaviour and interactions within hub-and-spoke SC relationships, we focus our study on a single hub-and-spoke SC and collect dyadic data. Although our findings are highly reflective of the behavioural nature of AAA and its suppliers (a 30.2% response rate), this research design still has limitations concerning its sample size and empirical context. In particular, we seek to use 100 dyadic responses to understand the complex relationships among power, shared goals and supplier flexibility. We also focus on collecting data from a single firm from a single industry in a single country. Future research on a similar topic should consider collecting large-scale data from multiple hub-and-spoke SCs from different industries located in various countries to enhance the overall generalisability of the findings. Third, we did not control the supplier's tier and importance to the focal firm. This is because AAA managers suggested selecting suppliers based on their unique invitation-bid process. This does not indicate that the relationship between AAA and its suppliers is purely transactional (i.e., an arms-length

relationship). In fact, there have been different levels of collaboration between the two parties to solve construction challenges and jointly bid for large construction projects, based on the AAA managers' comments. Nevertheless, there is no formal ranking of the supplier's tier and importance in AAA's system. However, this does not mean that focal firms in other hub-and-spoke SCs in different industries do not rank the characteristics of their suppliers. Researchers in the future may wish to control these factors in their studies. Finally, the interaction among the participants in a hub-and-spoke SC relationship also has the potential to affect suppliers' operations-related decisions (Guerrieri and Pietrobelli, 2004; Linden et al., 2009; Liu and Rong, 2015). Future research may wish to explore the effect of suppliers' interactions on supplier flexibility.

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Figure 1: Conceptual Framework

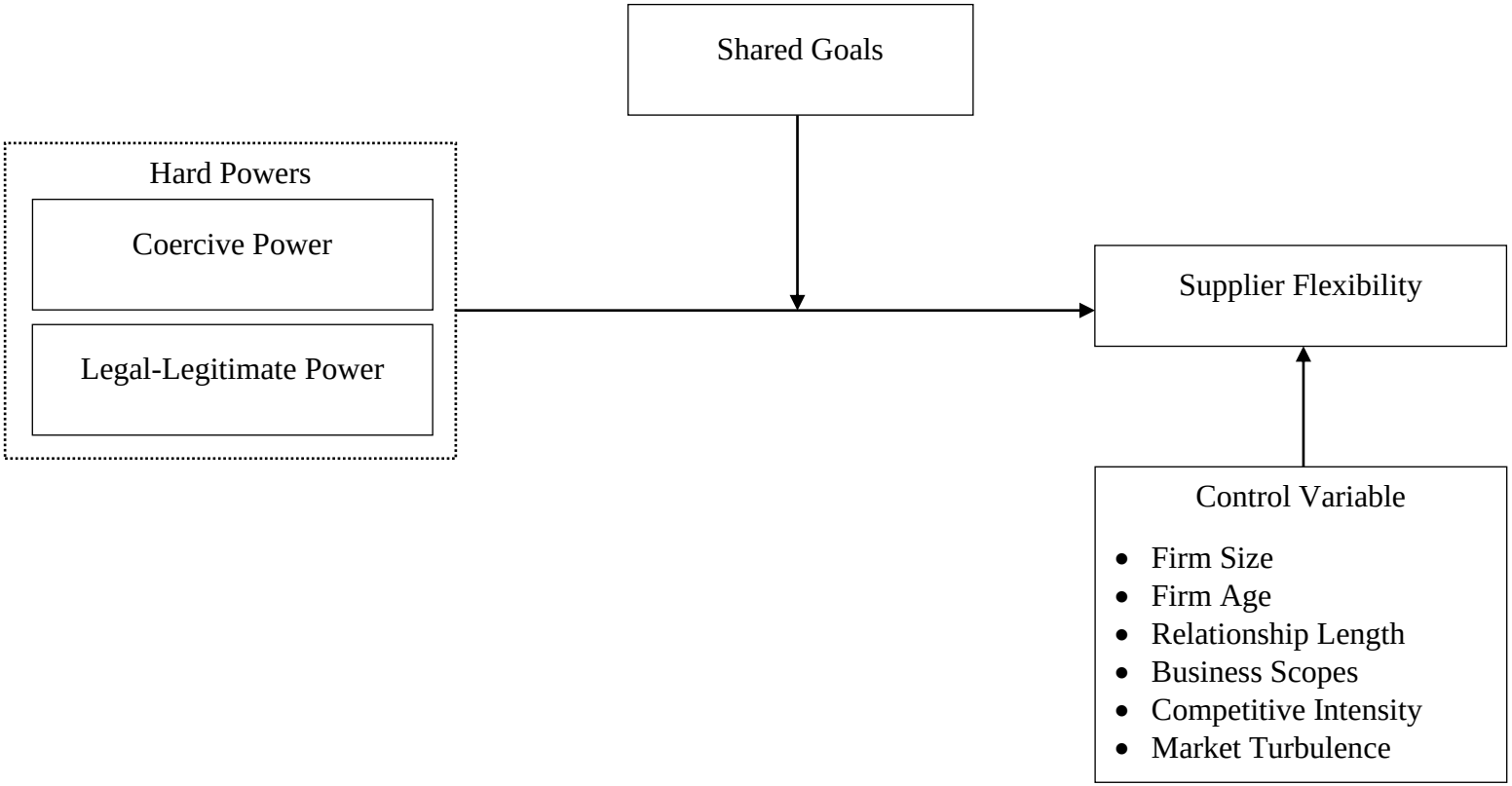


Table 1: Descriptive Statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Firm Size	----														
2. Firm Age	0.561*	---													
3. Relationship Length	0.318*	0.543*	---												
4. Foundation	-0.048	0.123	0.001												
5. Structure	0.261*	0.095	0.200*	-0.137											
6. Road	-0.405*	-0.262*	0.013	-0.096	-0.314*										
7. Interior & Exterior	0.008	0.068	-0.041	-0.072	-0.236*	-0.165									
8. Mechanical & Electrical	0.005	-0.103	0.012	-0.105	-0.346*	-0.242*	-0.181								
9. Landscapes	0.044	0.193	-0.072	-0.052	-0.169	-0.118	-0.089	-0.130							
10. Competitive Intensity†	0.220*	0.197*	0.284*	-0.017	0.309*	-0.008	0.027	-0.340*	0.077	---					
11. Market Turbulence†	0.039	0.021	-0.037	0.001	0.367*	0.001	-0.090	-0.312*	0.001	0.229*	---				
12. Coercive Power†	0.111	-0.009	-0.157	-0.076	0.148	-0.212*	-0.177	0.214*	-0.047	-0.147	0.041	**0.851**			
13. Legal-Legitimate Power†	0.150	0.000	-0.168	0.145	0.164	-0.351*	-0.211*	0.268*	-0.139	-0.099	-0.097	0.602*	**0.933**		
14. Shared Goals†	0.036	-0.011	-0.007	-0.018	0.033	-0.091	-0.038	-0.042	0.278*	0.021	-0.053	0.042	0.039	**0.728**	
15. Supplier Flexibility†	0.161	-0.078	0.105	-0.085	0.022	0.11	0.105	-0.095	-0.034	0.154	0.066	-0.239*	-0.253*	0.150	**0.794**
Mean	1.776	1.227	0.850	0.040	0.310	0.180	0.110	0.210	0.060	0.570	0.000	-0.330	0.010	1.290	0.790
Standard Deviation	0.586	0.300	0.374	0.197	0.465	0.386	0.314	0.409	0.239	0.868	0.711	0.914	0.931	0.446	0.501
Composite Reliability	----	----	----	----	----	----	----	----	----	----	---	0.887	0.953	0.767	0.829
Average Variance Extracted	----	----	----	----	----	----	----	----	----	----	---	0.724	0.871	0.531	0.630

Notes:
N = 100; *p < 0.05
Average Variance Extracted (AVE) square roots are shown in bold on the correlation matrix diagonal.
†Five-point Likert scales: -2 (“strongly disagree”); -1 (“disagree”); 0 (“neutral”); 1 (“agree”); 2 (“strongly agree”).
Firm Size = Log (employee number)
Firm Age = Log (years since the establishment of the firm)
Relationship Length = Log (the length of the partnership between supplier and AAA)
We choose “others” (business scope) as the benchmark group for the dummy code

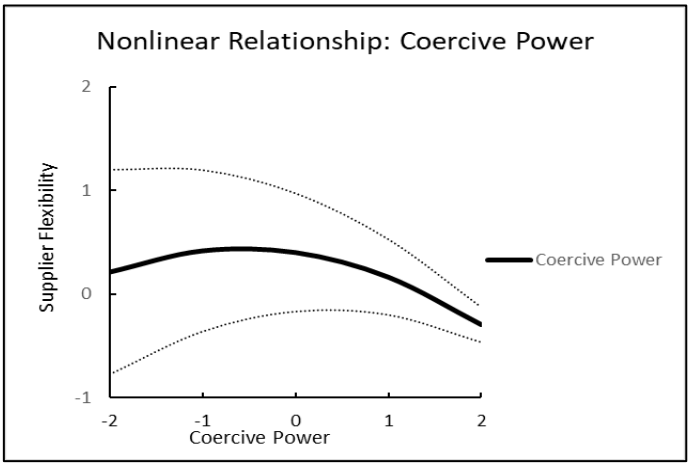
Table 2: Results

	Main Findings				Post-Hoc Analysis	
	Model 1	**Model 2**	**Model 3**		**Model 4**	**Model 5**
Controls						
Firm Size	0.319(2.856)**	0.344(3.254)**	0.394(3.626)**		0.337(3.112)**	0.390(3.391)**
Firm Age	-0.634(-2.561)*	-0.498(-2.093)*	-0.379(-1.540)		-0.521(-2.186)*	-0.431(-1.724)*
Relationship Length	0.251(1.378)	0.095(0.520)	-0.037(-0.184)		0.101(0.553)	-0.032(-0.159)
Foundation	0.041(0.629)	0.040(0.637)	0.016(0.262)		0.046(0.734)	0.038(0.601)
Structure	0.048(0.616)	0.070(0.938)	0.051(0.674)		0.069(0.938)	0.034(0.448)
Road	0.031(0.104)	0.123(0.424)	-0.083(-0.280)		0.138(0.472)	-0.083(-0.268)
Interior & Exterior	-0.014(-0.069)	0.014(0.072)	0.012(0.062)		0.019(0.094)	0.009(0.046)
Mechanical & Electrical	0.248(1.098)	0.177(0.813)	0.138(0.605)		0.201(0.913)	0.201(0.878)
Landscapes	0.276(1.233)	0.198(0.922)	0.041(0.185)		0.222(1.030)	0.081(0.362)
Competitive Intensity	-0.012(-0.058)	0.105(0.511)	0.031(0.151)		0.08(0.390)	0.004(0.021)
Market Turbulence	0.138(0.525)	-0.070(-0.268)	-0.091(-0.337)		-0.092(-0.351)	-0.124(-0.460)
Main Effects				**Main Effects**		
Coercive Power		-0.123(-1.791)†	-0.407(-1.478)	Coercive Power $_{residual}$	-0.016(-0.207)	-0.460(-1.524)
Coercive Power Square		-0.117(-1.989)*	-0.056(-0.257)	Coercive Power $_{residual}$ Square	-0.123(-2.126)*	-0.086(-0.367)
Legal-Legitimate Power		-0.093(-1.289)	0.231(0.863)	Legal-Legitimate Power $_{residual}$	-0.116(-1.58)	0.236(0.882)
Legal-Legitimate Power Square		0.152(2.624)*	-0.109(-0.735)	Legal-Legitimate Power $_{residual}$ Square	0.134(2.339)*	-0.105(-0.600)
Shared Goals		0.267(2.362)*	0.076(0.384)	Shared Goals	0.261(2.306)*	0.019(0.106)
Interactions				**Interactions**		
Coercive Power x Shared Goals			0.156(0.909)	Coercive Power $_{residual}$ x Shared Goals		0.261(1.382)
Coercive power Squared x Shared Goals			-0.024(-0.182)	Coercive power $_{residual}$ Squared x Shared Goals		-0.007(-0.051)
Legal-Legitimate Power x Shared Goals			-0.227(-1.267)	Legal-Legitimate Power $_{residual}$ x Shared Goals		-0.237(-1.329)
Legal-Legitimate Power Squared x Shared Goals			0.218(2.135)*	Legal-Legitimate Power $_{residual}$ Squared x Shared Goals		0.202(1.770)*
Constant	0.423(1.058)	-0.129(-0.295)	0.133(0.277)	Constant	-0.062(-0.143)	0.315(0.671)
Model Summary						
F-Value	1.538	2.174	2.167		2.114	2.107
P-Value	0.132	0.012	0.008		0.015	0.010
R-Square	0.161	0.295	0.354		0.289	0.348
Adjusted R-Square	0.056	0.160	0.191		0.153	0.183

Note:
N = 100; *** $p < 0.001$; ** $p < 0.010$; * $p < 0.050$; † $p < 0.100$
Dependent Variable = Supplier Flexibility
Unstandardized coefficients are reported with t-value in parentheses
Coercive Power $_{residual}$ = Coercive Power - Coercive Power $_{predicted}$
Legal-Legitimate Power $_{residual}$ = Legal-Legitimate Power - Legal-Legitimate Power $_{predicted}$

Figure 2. Graphical Representation

(a)



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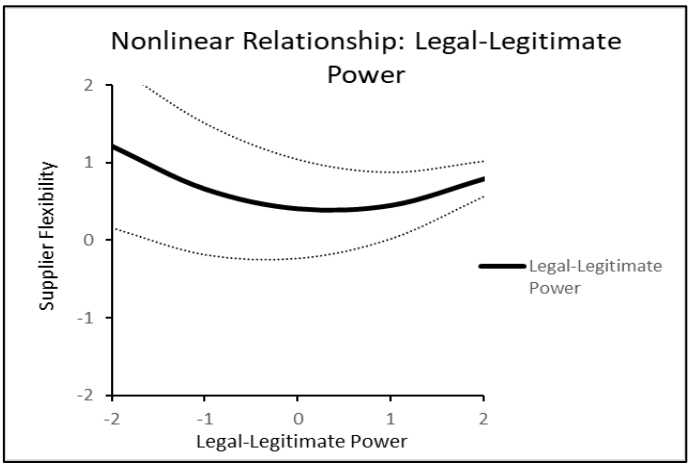

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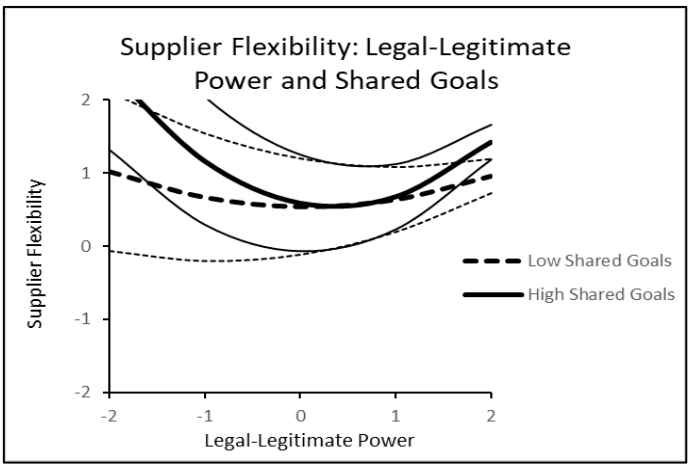

Note:
The thin dotted lines represent the upper and lower limits of 95% confidence intervals

Appendix 1: Supplier Information and Measurements

Supplier Types	Descriptions	Numbers
Foundation	*Providing inputs for* building the foundation on the ground (under-the-ground) for supporting the upper (over-the-ground) structures	4
Structure	*Providing inputs for* building upper structures (houses, buildings, bridges, towers, etc.)	31
Road	*Providing inputs for* building roadways, from foundation to the final layer of pavement	18
Interior & Exterior	*Providing inputs for* setting up and install interior work (inside parts of a building, such as spacing, painting, layout, lighting etc.) and exterior work (outer parts of a building, such as outer walls, cladding, exterior glasses, etc.)	11
Mechanical & Electrical	*Providing inputs for* installing and commission mechanical and electrical systems, such as machinery, heating-ventilation-air conditioning, electrical power system, etc.	21
Landscapes	*Providing inputs for* making/installing on an area of land light structures (fence, decks, planters), terrain (grading, terracing, etc.), and plants	6
Others	*Providing inputs for* other works relate to a construction project, such as energy supply, tools and material supply, heavy equipment supply, etc.	9
Questionnaires completed by Company AAA's suppliers		**Loading**
Coercive Power		
If we do not do as they ask, we will not receive very good treatment from AAA		0.903
If we do not agree with AAA's suggestions, they could make things difficult for us		0.778
AAA makes it clear that failing to comply with their requests will result in penalties against us		0.867
Legal-Legitimate Power		
AAA often refers to the terms of our contract to gain our compliance on particular requests		0.970
AAA makes a point to refer to our legal agreement when attempting to influence us		0.917
AAA uses sections of our formal agreement as a "tool" to get us		0.912
Shared Goals		
AAA and we in this relationship are enthusiastic about pursuing the collective goals		0.608
AAA and we are committed to improvements that may benefit the relationship as a whole, and not only the individual firm		----
AAA and us share the same ambition and vision		0.657
In most aspects of the relationship, AAA and we are jointly responsible for getting things done		0.889
Questionnaires completed by Company AAA for each individual supplier		
Supplier Flexibility		
This supplier is flexible on special requests		0.960
This supplier is responsive to special orders		0.830
This supplier consistently accommodates our special requests		0.529

Note:
--- Items deleted due to low factor loading
Five-point Likert scales: -2 ("strongly disagree"); -1 ("disagree"); 0 ("neutral"); 1 ("agree"); 2 ("strongly agree").