Asymmetric Relationship in Supply Chain: A Conceptual Framework and Research Opportunities

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Abstract

The case of power dominance does exist in the asymmetric relationship. Thus, an asymmetric relationship is generally explained as a lack of perceived dyadic equality in the partnership, which is caused by large dissimilarities in several aspects. Supply chain tactical strategies that translate the strategic planning into details of operational planning have been proven by studies able to improve performance. There are several studies on asymmetric relationship and supply chain tactical strategies. However, no study reveals the link of asymmetric relationships with supply chain tactical strategies. Whereas, knowing the link of those will support the decision-making on how asymmetric relationships must be managed to obtain better performance. Furthermore, this study attempts to fill the research gap through a comprehensive literature review. A conceptual framework is derived as the essence of the needs of supply chain tactical strategies to improve performance in an asymmetric relationship. The conceptual framework can be a fundamental theory for further research in asymmetric relationships as well as the manager's guidance for decision-making. Eventually, this research will be continued with a case study to test the conceptual framework into real-world and supply chain modeling to implement the supply chain tactical strategies.

Keywords
Asymmetric Relationship, Supply Chain Tactical, Strategies, Performance, Constructive Strategy, Satisfactory Alignment

1.   Introduction

There are several cases of successful partnerships in a supply chain that obtain benefits for the individual partner as well as a supply chain. For instance, Procter & Gamble and Wal-Mart work together to establish long-term information sharing and price agreement; Microsoft and Dell collaborate to ensure that they have a synergy technology roadmap (Handfield and Nichols 2002). Wal-Mart collaborated with Warner-Lambert to obtain the benefit of synergy planning, forecasting, and replenishment (Simatupang and Sridharan 2005), Chrysler and its suppliers reduced their cost significantly through collaborative relationship (Hartley et al. 2002). General Electric (GE) collaborated with its retailers in information sharing for a build-to-order system (Simatupang and Sridharan 2005). However, scholars and practitioners acknowledge that supply chain relationships are challenged by power asymmetry, wherein power dominance does exist in relationships (Mdarhri and Noureddin 2020; Villena and Craighead 2017).

It is essential to reveal some understandings in supply chain asymmetric relationships because of their significant impact on organizations' performance (Michalski et al. 2018). Furthermore, Nyaga et al. (2013) emphasized that asymmetry in the supply chain relationship itself is an important topic for research because some differences between partners are unavoidable. The reason is that the supply chain is composed of multiple company interactions. The interaction between companies over time is usually more asymmetric, imbalanced, and different (Thomas and Esper 2010). Thus, studies on asymmetric relationships are increasingly important over time. For decades, most of the research on asymmetric relationships only reveals the high-level concept and determine the extent of asymmetric relationships. However, there is no study in the asymmetric relationship area, which arranges to discuss supply chain detail strategies at the tactical level.

On the other side, research on supply chain tactical strategies is many. They attempted to reveal the determinant factors which impact the performance of individual firms or systems (Hall and Saygin 2012; Okongwu et al. 2016). Tactical strategy transforms strategic planning into details and becomes a benchmark for operational planning targets. It is also

a medium-term strategy that addresses the planning horizons of 1-2 years to incorporates some features from both strategic and operational models (Gupta and Maranas 2003). Therefore, the role of supply chain strategies is essential and critical to performance. However, there is a lack of study of supply chain tactical strategies, which reveals the phenomena of the asymmetric relationship as a context. In fact, that is a source of performance results through the uncertainty (Michalski et al. 2019; Pradabwong et al. 2015).

This study attempts to fill the gap of research in an asymmetric relationship as well as supply chain tactical strategies. The research question is that "In the situation of asymmetric relationship, what tactical factors that affect supply chain performance?" is needed to be answered to close the research gap. Furthermore, a conceptual framework will be generated to answer the question through an extensive literature review.

2.   Literature Review

The previous studies generally discuss the asymmetric relationship in three main areas. There are, first, a group of studies that discusses the high-level concept of asymmetric relationship (Mdarhri and Noureddine 2020; Benton and MAloni 2005). Second, a part of the studies reveals the measuring of asymmetric relationships (Belaya et al. 2009; Stannack 1996; Ramsay 1996). The third is a set of studies on the strategic level of asymmetric relationships (Bates and Slack 1998; Cendon and Jarvenpaa 2001; Belaya and Hanf 2009).

An asymmetric relationship is defined as the inequality of power distribution in the supply chain network, which was indicated by the power dominance (Dahl 1961; Emerson 1962), and a lack of perceived dyadic equality or relationship attributes and/or behaviors' proportion in a network (Thomas and Esper 2010). The presence of an asymmetric relationship is generally explained because of large dissimilarities within partners in a relationship. Several factors are claimed by studies as the causes of asymmetric relationships. The relative volume of sales and purchase with a partner is the source of the asymmetric relationship. For instance, the purchase volume of firm A is relatively lower than the total sales volume of firm B. Then, firm B is a dominant partner for A. The research identified the various source of asymmetric relationships. Then, it can be shown in Table 1.

Table 1. The source of asymmetric relationships.

The Source of Power in Asymmetric Relationship	Author[s]
Volume of sales and purchase	(Bates and Slack 1998; Thorelli 1986)
Number of alternative source or customer	(Caniëls and Gelderman 2007)
Resources, competences, and capabilities	(Cox 1999)
Organizational and market power position	(Cendon and Jarvenpaa 2001)
Information control	(McDonald 1999)
Company financial size	(Thorelli 1986)
Market trust and legitimacy	(Thorelli 1986; Cox 2001)
Specific technology and expertise	(McDonald 1999)

There is only a few research of asymmetric relationship which explored the elements of strategy on performance improvement (Nyaga et a;. 2013; Thomas and Esper 2010; Pérez and Cambra-Fierro 2015). The majority of the research explained the strategic level of strategies. French and Raven (2014) revealed the basic concept of power. Generally, individuals or firms could refer to six power strategies, i.e., coercive power, reward power, legitimate power, referent power, expert power, and informational power. Each power strategy has different characteristics to influence others and to receive the other partner reactions. Villena and Craighead (2017) conducted that how two types of asymmetries, size, and relational capital, affect perceived opportunism and performance. The imbalance of relational capital may lead the firm's partner to perceive more, rather than less, focal firm opportunism. Meanwhile, the presence of size asymmetry is seen as lower benefits by the buyer, whereas the supplier's perception of benefits is not affected. Research on the strategy of asymmetric relationships is listed in Table 2. In respect to proposed strategies, however, there is a lack of tactical strategies discussed. Consequently, the strategic level, which is mainly concerned with the design of the relationship network (Bilgen and Ozkarahan 2004), is challenging to be operationally implemented without more detail at the tactical level.

Table 2. The strategic level in asymmetric relationships.

The Strategy Applied in Asymmetric Relationships	Author [s]
Structural power position	(Cendon and Jarvenpaa 2001; Belaya and Hanf 2009; Thorelli 1986; French and Raven 2014)
Tolerant to asymmetric relationship and generate constructive behaviors	(Thomas and Esper 2010; Bates and Slack 1998; Cendon and Jarvenpaa 2001)
Specific asset/resource investment and technology	(Cendon and Jarvenpaa 2001; Gelderman and Weele 2004)
The size of the firm	(Stannack 1996; Bates and Slack 1998)
Economic base and expertise	(Thorelli 1986)
Product type, number of alternatives	(Cox 2001; Gelderman and Weele 2004; Caniëls et al. 2018)

On the other side, supply chain tactical strategies that transform strategic planning into details and become a benchmark for operational planning are required for better performance achievement (Steinrücke and Jahr 2012). Refer to supply chain performance concepts, and the performance is generally translated into the extent of individual member or supply chain to perform the higher level of responsiveness while operating in an efficient manner (Nudurupati et al. 2011). Hence, supply chain tactical strategies are developed to obtain better performance. Capacity management is one of the essential strategies which manages a wide range of planning from strategic to operational. On the tactical level, capacity tightness is proven as a significant factor in performance (Hall and Saygin 2012). Meanwhile, not only in performance results' context but also in supply chain flexibility, safety stock is a significant factor to dampen firms from the supply chain uncertainties (Pujawan et al. 2014). Furthermore, several studies explain that a frozen time fence is a way for firms to increase schedule stability, cost-efficient, and service level (Okongwu 2016). The updating of the production's schedule, which is named rescheduling in responding to the changes, has a significant impact on service level as well as operation cost (Yano and Carlsons 1987). Not only strategies on production context but also on the information flows, previous theories confirm the level of information sharing as determinant factors on performance (Hall and Saygin 2012). Owing to the importance of supply chain tactical strategies and the context of an asymmetric relationship; however, there is no research that discusses the link between those two essential variables.

In the context of asymmetric relationships, several studies confirm that the power dominance partner does exist (Belaya and Hanf 2009). For instance, the dominant partner can impose its will on another, such as demand uncertainty to optimize its profit (Baron 1971). The demand uncertainty alone is such as the level of order changes, which is one of the exogenous factors of the system caused by the asymmetric relationship. Instead, the power dominant supplier also reveals the uncertainties through stochastic lead time because of the lateness of raw material deliveries and price fluctuation (Gupta and Maranas 2003). Though, the dependent buyer has insufficient alternatives as raw material sources. Thus, the stochastic lead time is possible of exogenous factors into the system, which is caused by asymmetric relationships.

The way how dependent partner reacts to asymmetric relationships can be different. There are two possibilities of perceived balance satisfactory alignment. Thomas and Esper (2010) explains that dependent partners in relationships may perceive satisfactory alignment or not. Furthermore, when the dependent partner perceived unsatisfactory alignment, it could be tolerant or intolerant to the asymmetric relationships. Additionally, the tolerant partners attempt to seek satisfactory alignment through constructive strategy, while the intolerant partners perhaps to select a deconstructive strategy such as leaving the network (Belaya et al. 2009). The decision of a dependent partner that is tolerant or intolerant to an asymmetric relationship is generally considered as a comparative level between costs and benefits of the relationship's existence (Thomas and Esper 2010).

Moreover, when the potential benefits are higher than the costs of relationships, a focal company relies on continuing it. The possibility of growth and endorsement are the most reasons (Stuart et al. 1999). However, in the asymmetric relationships, the focal companies who more dependent on partners has limitation to express their leadership to others. The dominant partners usually not ready to accept leadership from other partners (Michalski 2019). Hence, a set of specific strategies is required by a dependent partner to improve performance. Strategies that are not changed to often and fewer changes in network design (Bilgen and Ozkarahan 2004).

Following the previous research, the performance measurement is presented in 2 [two] factors, responsiveness, and cost-efficiency (Nudurupati et al. 2011). In the context of asymmetric relationships, the performance objective is the same. Therefore, the strategy set must obtain better performance in those 2 [two] objectives. The rate of order fulfillment can measure responsiveness, and cost-efficiency can be assessed by calculating the total costs (Okongwu et al. 2016).

3.   Conceptual Framework

The focus of the conceptual framework is constructing the link of factors of asymmetric relationships and the strategies on achieving the objective. Based on the literature, the asymmetric relationship is the factor that influences the system through the uncertainties. On the other hand, better performance is the objective of companies. At the dependent partners' standpoint, because of their limitation to modify trading conditions, they can decide whether they are still tolerant or not on asymmetric relationships. Consider the higher relationship's benefits than its costs, dependent partners, can tolerant, and develop a constructive strategy to maintain relationships as well as achieve better performance. That performance is not only internal achievement such as cost efficiency but also responsiveness to customers, and the order fulfillment is considered as a performance objective. The explained link is depicted in Figure 1, which reveals a new theory in asymmetric relationships through extensive literature review.

The conceptual framework is considered to feature the exogenous factors that appear from asymmetric relationships and supply chain tactical strategies to improve performance under asymmetric relationships. The elements of the conceptual framework can be explained in relevant to each feature and purpose.
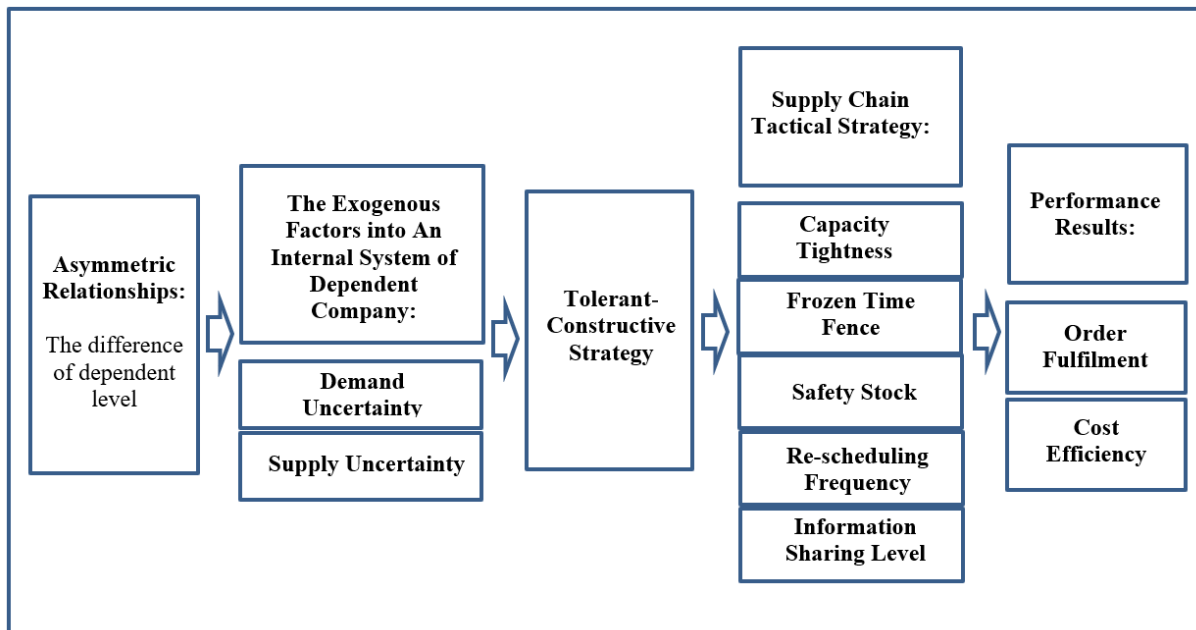

Figure 1. A conceptual framework of asymmetric relationship.

3.1. Asymmetric relationship

In the asymmetric relationship, the dominant partner can impose its will on others, such as demand uncertainty. They also have a large selection of prospective partners to seek short-term benefits motivated by self-interest. They can change the proportion of partners easily. The dominant partner can control other entities ' intended, behavior, and/or decision-making, such as capacity management and the possibility of a frozen time fence. The dominant partner can create other party's dependencies such as fewer alternative sources and generate value, as a leader, rule setter, capability builder, structuring, and strategizing. Those phenomena reveal the impact on the dependent/weaker partners in the relationship.

In the presence of dominant partner power in asymmetric relationships, the weaker/dependent partner can receive the volatility of buyers' orders, deal with canceled and/or rushed order, and due date changes (Pujawan et al. 2014). The weaker partner is also the potential to receive less accuracy and amount of information (Michalski et al. 2019). The weaker partner combat with supply uncertainties which lead to the unplanned event as well as time-consuming for raw material's unit price fluctuation acceptance. The uncertainties which reveal from the asymmetric relationship are exogenous factors to the system since the factors are external issues that cannot be controlled by the internal system.

3.2. Tolerant-constructive strategy

As the nature of the business relationship is that seek satisfactory alignment, the members will evaluate the benefits and costs of their relationships. The perceived balance of benefits and costs may impact to manager's decision that can be tolerant or intolerant to the asymmetric relationship. The intolerant members could deliver a deconstructive strategy, such as leaving the network. In contrast, tolerant members could provide constructive strategies that enable them to set a supply chain tactical strategy with the intention of performance results. Then, the performance will lead to a better position of the members in the supply chain. In addition, with the supply chain tactical strategies, the weaker members may use their power to communicate their effort rather than passive manners. Supply chain tactical strategies are built with the aim of better performance results. Wherein the results consider the basic concept of the performance, which is customer satisfaction, while cost-efficient. Eventually, better performance will lead to better satisfactory alignment in asymmetric relationships.

In this context, supply chain tactical strategies are the alternative way of tolerant partners to seek better performance through constructive strategy. The tolerant partners tend to serve their partners, shape their relationships, prevent partners misunderstanding, demonstrate their preferred relationship behaviors, strengthen positive partners' behaviors, and accept responsibility to express the sense of reciprocity for reinforcing reward and better results (Thomas and Esper 2010).

3.3. Supply chain tactical strategy

In the context of tolerant-deconstructive strategy, the needs of supply chain tactical strategies are evident. If the potential benefits of a relationship greater than its costs, managers consider tolerant of asymmetric relationships and implement a constructive strategy in order to seek satisfactory alignment (Thomas and Esper 2010). The weaker actors will use their power as an effort to communicate that they will not turn in passively to respond to the opportunistic of the dominant actor. The needs of supply chain tactical strategies can be explained as a tool for obtaining better performance. Wherein better performance will lead to a better position of dependent partner in the supply chain network.

- *Capacity Tightness*. This is the level of how tight the company's production capacity relative to the demand (Hall and Saygin 2012). The weaker partner can discuss the scenarios of capacity tightness to customers to set explainable capacity tightness them.
- *Safety Stock*. This is the level of how stock can dampen the supply chain uncertainties (Pujawan et al. 2014). The weaker partner needs to decide the correct size, and a certain point of safety stock will be placed.
- *Information Sharing*. This is the level of how a party correlates to other parties (Hall and Saygin 2012). The weaker partner can discuss with partners regarding the level of information sharing, which need to be shared within the supply chain.
- *Rescheduling Frequency*. This is the decision on how frequent the updating of production schedules in order to react quickly to unexpected inputs can be decided (Vieira 2003). The weaker partner's decision considers the customer demands and its costs.

- *Frozen Time Fence*. This is the decision on how the length of a time fraction at MPS considered no changes inside of the period can be decided (Okongwu 2016). The weaker partner can discuss the scenarios of length frozen fence with the customer.

3.4.   Performance results

Companies need to become more responsive to customers' demand whilst cost-efficient in order to survive in competition (Nudurupati et al. 2011). Particularly, companies that strive in asymmetric relationships must adequately serve their powerful partners as well as efficient operation to take a role in their supply chain partnerships significantly. Thus, the purpose of supply chain tactical strategies is obtaining higher responsiveness to customer's demand while operating in efficient manners.

The higher performance, which is revealed by supply chain tactical strategies, is always a company objective. It can be generated from a higher level of order fulfillment and operation cost efficiency. In this work, order fulfillment can be measured based on on-time delivery as per due dates and quantities required by customers that are confirmed by the company. This measurement will correspond to the responsiveness. Wherein cost efficiency can be assessed based on several cost components, namely changeover costs, inventory holding cost, and penalty cost imposed by the customers due to delay in delivery.

4.   The Research Proposition

Power dominance has a proven presence in an asymmetric relationship. The way in which an asymmetric relationship demonstrates an impact on managers' decision-making on tactical strategy differs based on the source of asymmetric relationships. In order to confirm a new conceptual framework, propositions are revealed as following manners.

Proposition 1: The presence of asymmetric relationship is more evident in the supply chain than symmetric relationships.
Owing to the definition of the asymmetric relationship, that is, the difference in the dependent and dominant level (Gundlach and Cadotte 1994), studies reveal the availability of it in the supply chain network. The availability of partners to have large options of prospective partners (Belaya et al. 2009), ability to impose their will to others (Gulati and Sytch 2007), and ability to control other partners' intended, behavior, and decision-making (Kähkönen and Virolainen 2011), indicate the availability of imbalance power distribution. Thus, there is the more dependent and more dominant partner in the relationship, namely, asymmetric relationships. The organizational position (Cendon and Jarvenpaa 2001), specific expertise and proportion of sales or purchase (Bates and Slack 1998), technology owned (McDonald 1999), and the number of alternatives (Caniëls and Gelderman 2007), amplify the level of asymmetric relationships. Therefore, Thomas and Esper (2010) explains that the relationship is more asymmetric, imbalance, and different over time.

Proposition 2: The dependent partners receive more uncertainty in asymmetric relationships than symmetric relationships.
The dominant partner can impose its will on others, such as demand uncertainty in order to optimize its profit (Baron 1971). The dominant partner control other entity's intended, behavior, and/or decision (Stannack 1996). However, the weaker/dependent partner can receive the volatility of buyers' orders, deal with canceled, rushed order, and the due date changes, and receives less accuracy and amount of information (Kaipia 2008). In the asymmetric relationship, dominant partners can easily change the partners to pursue their objectives (Belaya et al. 2009). While the dominant partners usually take advantage of the asymmetric relationship, the dependent partners usually receive more uncertainty (Michalski et al. 2019).

Proposition 3: The dependent tolerant partners prefer constructive supply chain tactical strategies rather than deconstructive strategies to improve performance in asymmetric relationships.
The dependent partners usually have insufficient alternative sources (Pujawan et al. 2014). They tend to prefer a constructive strategy rather than a deconstructive strategy if the potential benefits of a relationship greater than its costs (Thomas and Esper 2010). Thus, managers of dependent partners consider tolerant of asymmetric relationships and implement a constructive strategy in order to seek satisfactory alignment (Thomas and Esper 2010). Supply chain tactical strategies that be able to transform strategic planning into details and become a benchmark for operational planning (Steinrücke and Jahr 2012) have been proven as a tool for performance improvement. Joint decision-making within companies in the supply chain can improve the balancing of demand and capacity planning (Pujawan et al.

2014), compensate demand uncertainty by flexible orders, safety stock, and production rescheduling (Vieira et al. 2003), and reduce communication error by experiencing working together (Pérez and Cambra-Fierro 2015). Thus, supply chain strategies are more chosen as a constructive strategy to improve performance.

5.　　　Conclusion and Research Opportunities

There were a number of findings from literature in asymmetric relationships. First, the asymmetric relationship provokes the external uncertainties as exogenous factors (Gupta and Maranas 2003) of strategy decision-making (Cendon and Jarvenpaa 2001). Second, the dependent manufacturers in asymmetric relationships prefer a constructive strategy rather than a deconstructive strategy to achieve better performance (Pujawan et al. 2014). Third, under asymmetric relationships, supply chain tactical strategies are a tool of better performance achievement through a set of strategies such as capacity tightness, safety stock, frozen time fence, rescheduling frequency, and information sharing. The extensive literature review has been used to construct a new conceptual framework that can answer the research question. Thus, the link of exogenous factors that emerge from an asymmetric relationship and supply chain tactical strategies in order to achieve better performance is answered.

This study can fill the gap of knowledge in asymmetric relationships and wherein there is a lack of previous research that discusses the detail of supply chain tactical strategy. However, further validations are required to obtain stronger arguments. As follow up of this research, the authors will construct a comprehensive case study to the number of manufacturers to clarify the validity of a conceptual model. Thus, the phenomena of asymmetric relationships, including its exogenous factors and the firm's supply chain tactical strategies, can be explained in empirical cases. Furthermore, in order to prove the theory through a quantitative method, the authors will utilize the simulation model to obtain the appropriate strategies' scenarios on performance.

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