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# THE DILEMMA OF CENTRALITY: ELIMINATE OR PROMOTE OPPORTUNISTIC BEHAVIOR

From a Network Perspective

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## Abstract

This master thesis is a research proposal focusing on the extent to which a firm's position, within a network structure, impacts opportunistic behavior. Much of the recent literature on inter-firm relationships pays great attention to strategies controlling opportunism. Prior research has proved that conduct and performance of firms can be more fully understood by examining the network of relationships in which they are embedded. While a majority of study focuses on dyadic relationships, little attention has been paid to a wider scope, network perspective. The author advances a conceptual model, in order to describe how a firm's position can influence its opportunistic behavior within a network structure.

More specifically, the author precisely focuses on the central firm's opportunistic behavior. Firms that occupy a central position can obtain asymmetric power; but it is also easier to be observed when acting improperly. These two factors, asymmetric power and visibility, are used as mediators to deliver the impacts on opportunistic behavior caused by a central position. The firm holding asymmetric power has the potential corrupting influence; however, opportunistic behavior will be easily supervised in a central position. The total effect of a central position remains indistinct due to the conflict scenario caused by two mediators.

Network density has been introduced as the contingency in the conceptual model. It is not enough to describe the mechanism by only considering a position. With more recent work on the relational norm, a dense network promotes relational governance and an increase in the level of the norm. A central firm may have a better conscience not to behave opportunistically within a network that has a high level of the norm. Respectively, a central firm within a network has a low level of the norm, which has more possibility to behave opportunistically.

The main contribution of this research is to understand the mechanisms of opportunistic behavior under a social structure. This would provide a new version to control or monitor opportunistic behavior beyond dyadic relationship. Another construct is to augment transaction cost theory: this research proposal extends transaction cost theory with power theory and network theory.

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# 1. Introduction

## 1.1 Research Question

The strong trend of globalization pushes firms to compete in world-level markets, which brings more opportunities as well as challenges. Tougher competition and higher customer expectations have encouraged firms to collaborate with other firms. According to Contractor and Lorange (1988), firms are no longer independent self-contained units. A great number of enterprises seek partners to accelerate or increase the likelihood of achieving business goals. During recent years, several models and frameworks have contributed significantly to understand how relationships work between firms in business markets (e.g., Anderson and Narus 1990; Anderson and Weitz 1989; Dwyer, Schurr, and Oh 1987; Frazier 1983; Hallen, Johanson, and Seyed- Mohamed 1991). In the business-to-business world, relationship between firms is of paramount interest. Both academic research and business practice have witnessed the prevalence of social control mechanisms during the last two decades, lending support for the relational embeddedness. According to Gulati (1998), embeddedness refers to routinization and stabilization of linkages among members as a result of the history of exchanges and relations within a group or community. Social factors from embeddedness of firms in a rich social context could be influential for firms' opportunity sets. Economic sociologists have convincingly demonstrated how the social structure of ties within which firms are embedded can affect their actions directly (e.g. Granovetter 1985, he investigates how the distinct social structural patterns in exchange relations in the market shaped the flow of information).

Networks, based on such an embeddedness perspective of view, are applicable to both individuals and organizations (Baker 1990; Podolny 1993; Gulati 1995b). The basic definition for network is abstract: it is a gathering of individual members and direct and indirect ties (i.e. relationships) between them. All firms are embedded in the variety of networks in which they function (e.g. supply chain, economic organizations, and regional clusters). Based on the previous literature, some scholars have already discussed the network effect in different aspects; for example, research has begun to examine the influence of certain network characteristics on firms' abilities to realize the potential benefits of membership (Das and Teng 2002).



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A majority of studies have been conducted to test the important function of alliance networks as they function as “pipelines” through which information and knowledge flows between firms (Owen-Smith and Powell, 2004). According to Goerzen and Beamish (2005), network characteristics may influence not only the type or direction of member firms’ decisions (e.g., whether or not to adopt a particular practice, or the type and frequency of communication), but also the quality of those decisions. Gulati, Nohria, and Zaheer (2000) proposed that the “conduct and performance of firms can be more fully understood by examining the network of relationships in which they are embedded.” The networks that firms are embedded in provide the hint of possible behavior. Moreover, Gulati (1995) also mentioned the role of network in the choice of partners. It is reasonable to comment that networks may have social “spillover” effects on individual organizations, due to both direct and indirect social relationships within network. Given the strategic importance of information and its circulation within firms (Kogut and Zander, 1992), the role of inter-firm networks as conduits of information, learning, and knowledge is of great concern to both managers and scholars. As discussed by Darr and Kurtzberg (2000), and Beckman and Hauschild (2002), key network contributions that may have a particularly important effect on firm performance are the similarities and differences among network partners.

Transaction cost analysis has provided the foundation for many studies on inter-firm relationships management issues (e.g. Dwyer and Oh 1987; Heide and John, 1992; Anderson and Weitz 1992). Much of the related research focused on the risk of opportunistic behavior between exchange partners, which creates trading barriers. Opportunism is defined as “self-interest seeking with guile” (Williamson, 1985, p.47). In transaction cost analysis, Williamson (1985) assumes that all economic actors have the possibility to behave opportunistically, whenever such behavior is feasible and profitable. They may cheat, shirk, distort information, mislead partners, provide substandard products and services, or appropriate the critical resources of partners (Das and Teng 1998). However, opportunism excluded other forms of self-interest seeking, such as hard bargaining, intense or frequent disagreement, and similar conflictual behaviors (John, 1984), unless such behavior deliberately violates some previous promise. Originally, opportunistic behavior shows the conflict of interest between partners. Williamson (1985) narrows it to the business aspect as managers seek to serve their interests. This notion has been doubted by scholars in both organization theory (e.g. Ghoshal and Moran 1996) and marketing (e.g., Johanson and Mattsson 1987). The main concern of this Thesis is whether opportunism is a correct

descriptor of such behavior and to the implications of the opportunism concept for both theory and practice. Through an empirical study, not all managers would act opportunistically (e.g. Conner and Prahalad 1996, they investigate the relationship between knowledge and opportunism; the result turns out to be knowledge-based consideration can outweigh opportunism-related ones), so it is impossible to know who would or would not; the risk will always exist.

In this proposal, I will follow the idea given by Maitland, Bryson and Van de Ven (1985 p. 64), they view opportunism as “neither is ubiquitous nor is it very unusual”. The occurrence of opportunistic behavior has important practical implications. If the risk of opportunism is relatively high within a particular exchange relationship, considerable resources must be allocated to control and to monitor. Resources could have been deployed into more productive segments compared to locking them in here. Moreover, the risk of opportunism may produce substantial opportunity costs in the form of “valuable deals that won’t be done” (Calfee and Rubin 1993, p. 164). Therefore, firms normally shift away from market exchange to vertically integrated governance in order to curb such behavior. Transaction cost theory and related studies (Jensen and Meckling 1976; Williamson 1985) suggest that deliberate monitoring serves as a control mechanism that should suppress partner opportunism. On the contrary, some literatures suggest that monitoring may promote opportunism because of “reactance” types of effects (e.g., Barkema 1995; Deci, Koestner, and Ryan 1999; John 1984). Monitoring the partners’ behavior is costly, but the effect is indistinct: it can both eliminate and promote opportunism (Heide, Wathne and Rokkan 2007). This dilemma triggers us to think about if there is a dilemma of opportunism within a network as well, since a network might have an “invisible” social monitoring mechanism towards opportunism.

As previous study indicates, a network could have impact on firms’ behavior (Gulati, Nohria, and Zaheer; 2000). However, as Gulati (1995a) proposed: if we recognize that any transaction is embedded in a history of prior relationships and a broader network of relationships, the analysis of transaction costs and contracting issues needs to be significantly revised. Hence, I would like to blend transaction cost analysis together with network theory, to investigate a firm’s behavior from both the transaction cost and the relational perspective. In this proposal, I argue how embeddedness in a network influences the firms’ opportunistic behavior. Moreover, we would like to focus on one specific configuration of network content, which is a less explored area: centrality.

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Centrality was operationally defined as "aggregate prominence" (Knoke and Burt 1983), a measure that indexes centrality as a function of the centrality of those to whom an individual is connected through direct and indirect links (Bonacich 1987). By definition, centrality is normally used to describe such a network. The network's success and ability to solve problems, together with the perception of leadership and satisfaction of the members with the outcomes, is closely connected with the centrality concept (Freeman 1979).

In this proposal, centrality is used as the dimension to describe a firm's position within network structure. The degree of centrality of the node (i.e., an organization) in a network, can be defined as its structural importance (S. P. Borgatti, Everett, and Johnson 2013). With regards to a firm's level, centrality could be interpreted as the position a firm occupies in a certain network. For instance, a removal of a node with high degree of centrality from the network might lead to weakening the network connections or even disconnection of parts within the network. It is proposed that high centrality of a company in a network promotes higher volume and speed of assets, information, and the status of flows access (Galaskiewicz 1979). A central actor can benefit from resource asymmetry, which makes it more possible to have the access to external assets from the connections, including information, know-how, and other important resources.

Moreover, due to higher status and power stemming from a central position in the network (Wasserman and Faust 1994), the more central player will not only enjoy access to more resources, but also have higher power over other members, significantly increasing that player's chances of success. Power refers to the ability to influence or control outright the behavior of people in social science; one of the key determinants of power, according to sociologists, is dependence. Emerson (1962) suggests that the power of A over B is equal to and based on the dependence of B on A. Dwyer (1984) states that dependence and power "rests on the extent to which B is dependent on A for valued resources" (p. 682). Therefore, a firm's position within the network plays a decisive role on its power.

Many previous empirical studies have shown that the possession of power encourages a firm to act opportunistically by unfairly gaining a share of profit from an exchange (e.g. Roering 1977; Wikinson and Kipnis 1978; Dwyer and Walker 1981; Kale 1986; McAlister, Bazerman, and Fader 1986; Frazier, Gill and Kale 1989; Frazier and Rod 1991). This phenomenon might result in serious asymmetry that violates network stability. On the other hand, Tracey, Heide and Bell (2014) indicate that a highly centralized one or few

organizations, often referred to as “hubs” – have a disproportionately large number of connections to members within a network. Highly centralized networks are often organized in a manner approximating a hub-and-spoke pattern (Provan, Fish and Sydow 2007). The central location of the hub organizations affords members greater influence through interactions that take place within a network. The effects of such network centralization can be understood in terms of control logic, i.e., the centralized organizations are creating norms and rules for that network. In highly centralized networks, hub firms assume a leading role in building common purpose and lending legitimacy to other members with which they are associated (Dhanaraj and Parkhe 2006). It is naturally for members to pay more attention to hub organizations’ behavior as followers. Therefore, it could be harder for centralized organizations to perform opportunistically, as they are more visible.

This research proposal is concerned with three issues mentioned above: (a) the combination of transaction cost analysis (often, abbreviated as TCA), and social embeddedness to explain a firm’s opportunistic behavior within networks; (b) to hypothesize the possible direction and magnitude of the centralization influence in a firm’s opportunistic behavior; and (c) use power as a mediator of centrality, in order to investigate the effects on opportunistic behavior. A firm’s performance is seen as a function of both network configuration and its internal governance process. The specific roles of social structure and process, and how such factors ultimately impact on performance, remain elusive. Hence, the research question is stated as follows:

***How does a firm’s position (within network structure) influence its opportunistic behavior?***

I focus on two main factors in the research question: a firm’s position, and its opportunistic behavior. Centrality has been introduced above, and is used to measure a firm’s position in a network. I draw on social network theory (e.g. Provan et al. 2007) to propose that the location of a firm within a network may influence its power endowment. Specifically, a centrally located firm will be able to capture more power since other actors in the same network may rely heavily on a central actor when managing transactions. A centralized network gives rise to hierarchical governance (e.g., Mooi and Frazier 2001), hence central firms are more likely to perform as network leaders. When a network tend to be more centralized, Geyskens, Steenkamp and Kumar’s (1999) research shows that greater levels of centralization in favor of a partner foster greater use of threats by that partner. The

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empowered firm has the potential to abuse its power, and behave improper. According to TCA, opportunistic behavior is unpredictable before occurrence. Hence, I propose that the possibility of behaving opportunistically for a centrally located firm is relatively high since it acquires asymmetric power.

Conversely, a centrally located firm has not only more ties, but also a higher frequency of exchange or communication; therefore, it has more chance to be caught when behaving dishonorably. Transaction cost analysis (Williamson 1985) gives the idea that in managing a discrete transaction at the lowest possible costs, the monitoring costs for individual firms are decreased under such society organizations, because actors may not have the caution to do so. Acting as leader in the network, a centrally located firm may be viewed as example of proper behavior. Behaving opportunistically, once caught by other firms, might be misunderstood as “correct” or “acceptable”. As a result, other firms within the same network will behave improperly and finally harm the collective interests. A centrally located firm, therefore, will have less incentives to behave improperly even though it has the chance to do so. In this respect, I propose that a centrally located firm within a network structure may be more cautious in behaving opportunistically due to higher visibility.

Beyond investigating the conflict scenario caused by a firm’s position, I proposed that network density could be the contingency that plays a decisive role. Network density promote exchanges in information, resources and so on; studies (e.g., Macneil 1980) prove that a dense network promotes relational governance, therefore a denser network will have a higher level of the norm. In general, the norm can be defined as guidelines for proper behavior, and a higher level of the norm will reduce the incidence of improper behavior. An empirical study by Rokkan, Heide and Wathne (2003) proposed that a solidarity norm, defined as the willingness of parties to strive for joint benefits (Antia and Frazier 2001; Heide and John 1992), has caused a shift in the effects on the relationship between buyer-specific investments and supplier opportunism. Under a low level of a solidarity norm, specific investments will promote opportunistic behavior; this scenario is consistent with transaction cost theory (Williamson 1983, 1985). In contrast, when the solidarity norm is high, specific investments are actually decreasing the receiver’s opportunism. Following this idea, I proposed that, under a higher level of the norm, a firm in a central position will be less likely to behave opportunistically. In contrast, when the level of the norm is low, the centrally located firm will have a higher incentive to behave opportunistically.

This study aims to provide a theory-based research model to describe such a dilemma scenario, and figure out how a firm's position within a network influences its relationship performance (i.e. opportunistic behavior). In accordance with the research question, the study relies heavily on (a) transaction cost analysis, (b) network theory, (c) inter-firm power theory. I will review and present both theory and empirical study according to the three theories mentioned above.

## 1.2 Main Contributions

With this framework, I seek to make three contributions. First, I am adding to existing literature on inter-firm governance. Historically, the emphasis in most literature has been on micro-level mechanisms of opportunism (e.g. Wathne and Heide 2000). Emerging research pays much attention to the larger context, such as the inter-firm network, in governance mechanisms (Antia and Frazier 2001). I also add to past research by proposing: 1) network configurations (centrality and density); 2) possible effects on opportunistic behavior. Theoretically, the framework points to both larger systems of governance such as the network, and also discrete organizations.

Second, this research proposal uses a multi-theoretical approach to create a more comprehensive conceptualization of an inter-organization relationship, by integrating economic and sociological perspectives to explain the determinants of opportunistic behavior. TCA's drawback of excluding inter-firm relationship can be eliminated by adding in the social norm. Historically, according to traditional transaction cost theory, literature on opportunism have tended to focus on how to do integration to eliminate opportunism. This research on network perspective goes beyond this initial stage.

Third, the framework may be a new version of control and of monitoring inter-firm opportunism beyond dyadic relationship. The two combined perspectives, network centrality and network density, are expected to explain significantly about such greater proportion of opportunistic manifestation in inter-organization exchange through social structure. Although the model does not cover all related perspectives, it still has managerial implications.

## 1.3 Thesis Structure

The remainder of this thesis is organized as follows:

Chapter 2 focuses on the three main theories I am going to use for the research model. They are transaction cost theory, network theory, and power theory.

In the section of transaction cost theory, I examine existing literature and first present the main logic with assumptions of the theory. Drawbacks of transaction cost theory is also presented in this section. After that, I proceed to the notion of opportunistic behavior; the typology and outcome of such behavior is followed. To end this section, empirical findings that are related to the research question are presented in this disciplines.

In the section focusing on network, I first examine the literature on definition and purpose of network formation according to different schools of thought. Network is used as a background in the research model; hence, it is not a research focus in this Thesis. I will, however, introduce the origin of network according different schools briefly, then proceed to empirical findings related to network. The concept of network centrality is introduced after that; I use this configuration to describe a firm's position within a network structure. After presenting the definition, I listed and compared four main accepted measures, in order to decide which measure fits the research model best. As the highlighted factor in network content, how centrality can violates a firm's behavior is my main concern. Through existing literature, both positive and negative effects of the position of centrality are presented in the end.

In the section of power theory, key concepts in power theory are presented, including definition, composition, scale, base and effect. Empirical findings are provided as well. Asymmetric power is used as a mediator in the research model; namely, how does a firm's position within a network structure create power asymmetry, and how does asymmetric power influence a firm's behavior is the main focus according to the research model. Empirical studies in this discipline are presented as the ending of the section.

To end the theoretical chapter, I briefly summarize how each theory could contribute to the research model.

Chapter 3 describes research model and hypothesis development based on the three theories introduced in chapter 2. Based on such theories, I present two main hypotheses that create a conflict scenario. However, conveying only the discussion about such a position is too limiting in analyzing opportunistic behavior. In order to make the model more practical, I extend the main hypothesis with a contingency: network density. The research model will then be gathering all factors in order to figure out how these factors function together toward encouraging (or curbing) opportunistic behavior.

Chapter 4 then discusses the theoretical implications of the research model. Possible mechanisms, both including and excluding the contingency variable, will be presented in this part. I also state plainly the limitations of the research model in this chapter. Due to limited knowledge and resources, I am not able to conduct an empirical study. Hence, I briefly state some suggestions for future research when discuss about limitations.



## **2. Theoretical Background and Literature Review**

### **2.1 Transaction Cost Analysis and Opportunism**

#### **2.1.1 Introduction**

Recently, transaction cost theory (e.g. Williamson 1985, 1996) has been frequently used as the foundation theory for many studies on inter-organization relationship governance (e.g. Anderson and Weitz 1992; Dwyer and Oh 1987; Heide and John 1992; John 1994). Much of the literature on inter-organization relationships has focused on strategies controlling opportunism (e.g., Rindfleisch and Heide 1997). Opportunism has been an emerging topic for decades, as it can directly damage a firm's interest without the ability to be predicted. The risk of opportunism may discourage a firm's participation in cooperation, and make transactions inefficient. Opportunistic behavior is the phenomenon I am investigating in this proposal.

The purpose of this chapter is therefore to explore the occurrence of opportunistic behavior, types of opportunistic behavior, triggers and possible methods to hinder such behavior through the existing literature. A brief introduction of transaction cost analysis will be given at first, in order to have a better understanding of opportunistic behavior. At the end of this chapter, I present related empirical findings in this discipline.

#### **2.1.2 Transaction Cost Analysis**

Transaction cost analysis (or TCA) suggests that the mode of governance between market and hierarchies is determined by differences in transaction costs (Coase 1937). In a firm, hierarchical governance is used due to the cost of economic exchange in market governance exceeding the cost of internal organizing. The central idea of TCA is "transactions will be governed by the institutional arrangement that is most efficient" (Bradach and Eccles 1989, p. 99). TCA provides a rational explanation of to make within firm's boundary, or to buy from the market.

Transaction cost is defined by Dahlstrom and Nygaard (1999) as "expenditures associated with an economic exchange that vary independently of competitive prices and the

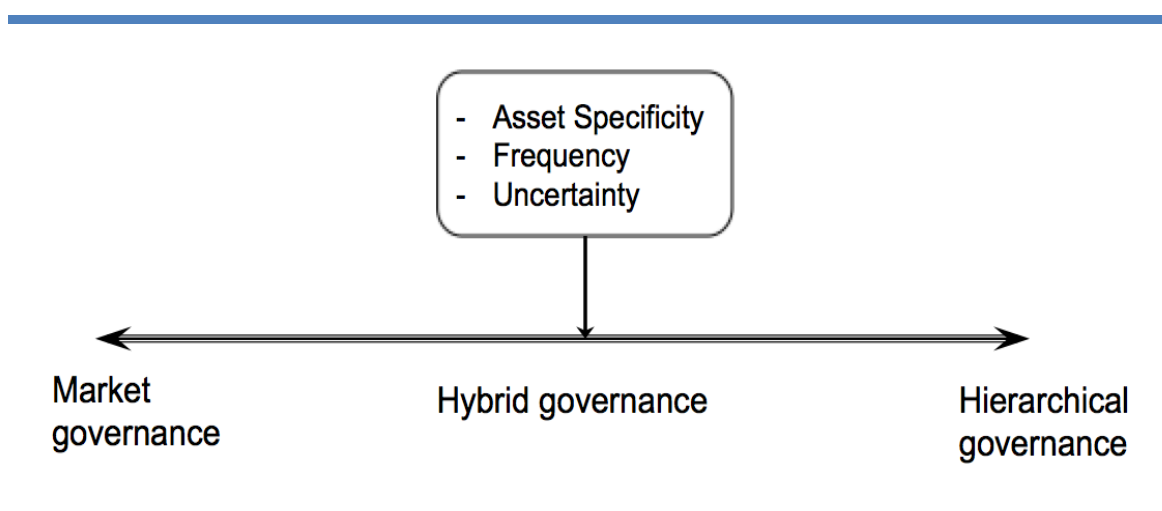
product exchanged” (p. 161). Based on the literature of Dahlstrom and Nygaard (1999), three costs can be identified:

- *Bargaining costs* are expenditures associated with negotiation among exchange partners; they are made periodically to modify contractual terms (Milgrom and Roberts 1990).
- *Monitoring costs* are expenditures paid to guarantee the fulfillment of contractual obligations or ensuring that exchange partners act in the best interest of all parties (Lal 1990).
- *Maladaptation costs* are expenditures associated with communication and coordination failures among exchange partners that occur, for example when a product’s information does not accompany the delivery (Reve 1986).

Williamson (1985) categorizes transaction cost into two types: ex ante costs and ex post costs; the classification depends on the cost generated before or after the agreement is made. Ex ante costs are costs associated with bargaining costs and ex post costs are associated with monitoring and maladaptation.

Among studies of transaction cost theory, Williamson’s (1985) TCA has been the primary construct of operationalization. Williamson (1975) improved the theory of Coase (1937) about the nature of the firm. The main question TCA seeks to explain is why some transactions need to be internalized, and cannot be conducted as market transactions. The content which TCA focuses on is the discrete transaction; the governance structure is

**Figure 2-1 The Continuum of Exchange and Mode of Governance**  
(Williamson, 1985)



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determined by the most cost efficient way. Under some assumptions, TCA explicitly considers the efficiency implications of adopting alternative forms of governance and suggests three modes of governance on the indicated continuum of the exchange: market, hybrid, and hierarchy (See Figure 1).

### *TCA Assumptions*

TCA is based on two assumptions: bounded rationality and opportunism. These two assumptions pertain to human behaviors.

***Bounded rationality*** means that humans try to be rational, but are only limited to do so. Due to limited knowledge and an unpredictable future, it is impossible to have an overall control ex ante. This assumption has important implications for contracting parties, as managers are unable to design comprehensive contracts, covering all possible contingencies. Based on this assumption, it is impossible to elaborate a completed contract.

***Opportunism*** is a phenomenon, defined as “self-interest seeking with guile” (Williamson, 1985, p.47). TCA assumes that all economic actors have the possibility of being opportunistic, to the extent that they may cheat, shirk, distort information, mislead partners, provide substandard products and services, or appropriate the critical resources of partners (Das & Teng, 1998).

### *TCA Contingencies*

According to Williamson (1985), three transaction attributes are used to determine the governance structure of discrete transaction; they are: (1) specific investments; (2) uncertainty; and (3) transaction frequency. These three transaction attributes are used as contingency variables in TCA model.

***Specific investments*** (or ***asset specificity***) refers to durable investments that are made only for specific transactions. The asset is irreversible, and cannot be redeployed easily to “alternative uses and by alternative users without sacrifice or productive value” (Williamson, 1991b, p. 282). Therefore, switching to another partner is costly.

***Uncertainty*** is a property of the environment where exchange takes place. It occurs in two forms: (a) external (environmental) uncertainty and (b) internal (behavior) uncertainty.

- *External or environmental uncertainty* occurs when relevant contingencies surrounding

an exchange are unpredictable to be specified ex ante in a contract.

- *Internal or behavior uncertainty* is a problem of performance evaluation or difficulty in ensuring ex post whether contractual compliance is taking place (Geyskens, Steenkamp, and Kumar 2006).

*Transaction frequency* refers to the rate of transaction recurrence with a specific partner. TCA suggests that when an asset-specific transaction recurs, it requires a constant monitoring effort. Under this situation, it is more cost efficient to use hierarchical governance to ensure trading.

### *Market Governance*

Market governance corresponds to formal contract, representing promises or obligations to perform particular actions in the future (Macneil 1978). The more sophisticated the contract is, the more precise the promises, obligations, and processes are for dispute resolution. Normally, market transactions require all relevant information to be available before actors enter the agreement. However, the identity of the actors is irrelevant and no dependency relation actually exists between actors. The agreement is well defined by contract; and it is easy to switch exchange partners with little penalty because other prospective partners offer virtually identical resources (Dyer and Singh 1998). As transactions are governed by formal terms, interpreted in a legal way, exchange partners have little chance to bargain on that.

Market governance mostly benefits firms by providing cost advantages of external specialists and enabling firms to focus on their core business (Quinn and Hilmer 1994). However, it is impossible for firms to create a relational rent. Relational rent is a supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners. As “there is nothing idiosyncratic about the exchange relationship that enables the two parties to generate profits above and beyond what other seller-buyer relationship can generate” (Dyer and Singh 1998, p. 662).

### *Hierarchical Governance*

Hierarchical governance (intra-organization governance) is a governance structure opposite to that of market governance; in this case, a firm that is using hierarchical governance will keep all exchange within that firm’s boundary. This governance form is not

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bound by formal contract; therefore, such a form provides flexibility and adaptability. While adaptations to disturbance will be handled internally, judgments and negotiations will still be needed under this situation. Hierarchical governance requires distinction for functions and powers, to the extent that one partner should have the right to set regulations and impose decisions on the others. Since only one partner is in charge of decision-making, hierarchical governance may not be the most efficient structure compared to market governance.

### *Hybrid Governance*

Hybrid governance is a governance structure between market and hierarchy. It refers to the neoclassical contract, which is more flexible and adaptable than the classical (or formal) contract but less adaptable than hierarchical governance. Hybrid governance mitigates contractual hazards that would increase under market governance (due to specific assets and uncertainty) without creating additional costs of bureaucracy, and promotes incentives that usually decrease under hierarchical governance (Williamson and Ghani 2012). Bradach and Eccles (1989) describe it as an ideal governance type. By using hybrid governance form, exchange partners are controlled by formal contracts, but still utilize autonomy when there are planning gaps that exist on certain contracts. Since exchange partners are not totally independent, changing partners is not free under hybrid governance.

### **2.1.3 Existing Problems about TCA**

Although it has been proved that TCA can apply to many empirical cases (e.g. Heide and John 1988, 1990; Dwyer and Oh 1988; Anderson 1985), there are criticisms that exist as well. The most questioned notion is the behavioral assumption of opportunism; scholars have commented that TCA oversimplifies such behavior to be misleading (Heide and John 1992). The core of the criticism draws from a social embeddedness perspective. Scholars argue that exchange is typically embedded in social structures, in which opportunism is the exception, rather than the rule (Granovetter 1985). There is the notion that “relationism (Mecneil 1980)” defines human behavior in a quite different way from opportunism as described by TCA.

Because TCA uses discrete transactions as research units, a particular concern is that TCA “...normally examines each trading nexus separately. Albeit useful for displaying the core features of each... interdependencies among a series of related [trading relationships] may be missed...” (Williamson 1985, p.203). TCA states that formal contracts are limited in

inter-organization relationships; therefore, even if a formal contract exists, it is often augmented by some informal agreements or given norm (Heide and John 1992). Contracts only cover a finite duration and certain information, yet some firms may consider keeping the relationship “evergreen” and expect to renew again after expiration (John and Heide 1992). In this proposal, I will broaden the TCA paradigm with the social embeddedness theory by using network structure in research, in order to compensate for the deviance of that TCA has regarding opportunism.

#### **2.1.4 What is opportunistic behavior?**

The original definition of opportunism, according to some transaction cost literature, is “self-interest seeking with guile” (Williamson 1975, p. 6). The differentiation of this definition from standard economic assumption of self-interest seeking behavior is the notion of guile. Williamson (1985, p.47) explains guile as “lying, stealing, cheating, and calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse.” In practical terms, this characterization allows for the possibility that human beings are only “weakly moral” (Douglas 1990) and will act opportunistically whenever feasible and profitable. Therefore, two conditions must be satisfied when an actor behaves opportunistically: (1) there is a chance to do so; (2) being opportunistically can give extra payoffs.

John (1984) and Williamson (1993) discussed this situation and concluded that individuals cannot be counted on to honor contracts or fixed rules of interaction. Although scholars have discussed about opportunism quite often, the notion of opportunism is controversial. Researchers in organization theory (e.g., Ghoshal and Moran 1996) and marketing (Johanson and Mattson 1987) questioned whether opportunism is the right descriptor of human behavior and whether it gives implications of the opportunism concept. Maitland, Bryson, and Van de Ven (1985, p.64) interpret opportunism as a phenomenon that is “neither... ubiquitous nor is it very unusual”. Some researches identify behaviors that seem to qualify for the opportunism label. These includes quality shirking (Hadfield 1990), falsification of expense reports (Phillips 1982), violation of promotion agreements (Murry and Heide 1998), breach of distribution contracts (Dutta, Bergen and John 1994), and bait-and-switch tactics (Wilkie, Mela and Gundlach 1998). Wathne and Heide (2000) comment that taking advantage of existing information or resources should not be described as opportunism, unless it was “contrary to the principles of the relation in which it occurs (Mecneil 1980)”.

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The fundamental concern of TCA is to develop satisfactory safeguards, that is “...organize transactions ... [to] safe guard them against the hazards of opportunism” (Williamson 1985, p.32). The only solution to solve opportunism is to impose vertical integration according to TCA. However, this strategy is not always practical. In real life, an asymmetric relationship is common, and exchange partners may vary in size, reputation, etc. For example, a manufacturer may want to cooperate with a large retailer since they hold significant market share; under such a situation, however, the manufacturer may not have sufficient funds to integrate the retailer.

### **2.1.5 Forms of Opportunism and Outcomes**

Opportunism has different forms, and existing studies use different standards to classify it. A classification is *ex ante* opportunism and *ex post* opportunism. *Ex ante* opportunism refers to the hidden information before an agreement reached; *ex post* opportunism refers to hidden action after the agreement is reached. Another classification is blatant opportunism and lawful opportunism (Wathne and Heide 2000). Blatant opportunism (Masten 1988) is the strong form that violates formal contract. It could happen both *ex ante* and *ex post*. Another form is called lawful opportunism, it describes the situation in which a firm violates the relational contract (or social contract), and normally that happens *ex post*.

Wathne and Heide (2000) reviewed existing literatures and industrial cases of opportunism; they then summarized the similarities and differences of various forms of *ex ante* opportunism, and divided them into two categories: active and passive. The manifestations of active or passive opportunism depend on whether a particular behavior (or lack of thereof) takes place within existing exchange circumstances or whether the original circumstances have changed as a result of exogenous events. Figure 2-2 shows the forms of opportunism and possible outcomes of each type of opportunism according to Wathne and Heide’s (2000) study. It is shown that the exchange partner’s benefit will be hurt in the long run, but the party engaging in opportunistic behavior can only benefit in the short term. For existing situations, systems’ revenue will decrease, and the rest of the parties will be hurt; as a result, the other parties may react against such behavior even though they are not connected directly.

**Figure 2-2 Forms of Opportunism and Possible Outcomes (Wathne and Heide 2000)**

		Circumstances	
		Existing	New
Behavior	Passive	<p>1</p> <p>Evasion</p> <p>↓</p> <p><b>Cost effect:</b> Decrease for O (short-term), increase for E (long-term)</p> <p><b>Revenue effect:</b> Decrease for E, S (long-term)</p>	<p>2</p> <p>Refusal to adapt</p> <p>↓</p> <p><b>Cost effect:</b> Minimal</p> <p><b>Revenue effect:</b> Increase for O (short-term), decrease for E and O (long-term, forgone revenues due to maladaptation)</p>
	Active	<p>3</p> <p>Violation</p> <p>↓</p> <p><b>Cost effect:</b> Increase for E (long-term)</p> <p><b>Revenue effect:</b> Increase for O (short-term), decrease for E, S (long-term)</p>	<p>4</p> <p>Forced renegotiation</p> <p>↓</p> <p><b>Cost effect:</b> Increase for E (haggling, concessions)</p> <p><b>Revenue effect:</b> Increase for O (short-term, from concessions), decrease for E and O (long-term, forgone revenues due to maladaptation)</p>

O = Party engaging in opportunistic behavior; E = Exchange partner; S = System (e.g., other parties).

Source: *Opportunism in Inter-firm Relationships: Forms, Outcomes, and Solutions*

### 2.1.6 Limitations of Current Study on Opportunism

Although much research has discussed the general definition of opportunism, the criterion of opportunistic behavior becomes unclear. According to the original definition, many potential different behaviors can be viewed as opportunistic behavior. For example, quality shirking is opportunistic behavior in the case that a partner is withholding efforts, or failing to honor the contract. On the contrary, a distribution contract which allows selling in an unauthorized territory involves an active effort (Wathne and Heide, 2000). To this extent, the definition of opportunism is poorly understood, as the outcome remains ambiguous.

In original TCA theory (e.g. Williamson, 1975), opportunism is a behavior that violates a formal contract. More recently, as relational contracts have appeared, opportunism has been augmented to include violation of this type of informal contract. Under relational contracts, the parties augment formal contracts with specific contracting norms (e.g. Macneil, 1980). Norm is a standard of proper conduct, and it is abstract by definition.



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Although some scholars discuss opportunism including relational contracts (e.g. Williamson, 1996), the extant literature provides limited guidance regarding (1) the specific appearance of opportunistic behavior under relational contracting and (2) the relationship between the original and emergent theoretical perspective (Wathne and Heide, 2000). Researchers have now extended the original notion of opportunism to the domain of relational contracts (e.g. Muris 1981; Williamson 1979, 1985, 1991).

Moreover, quite important to this proposal, very few studies provide a clear measurement of opportunism. Although this is consistent with its definition, and TCA views it as a phenomenon, other research has suggested that opportunism is more appropriately viewed as a variable to be explained (e.g. John, 1984; Anderson, 1988). According to Williamson (1985), the incentive of opportunism can be characterized as calculative (e.g. Williamson 1993a) in nature. In this proposal, I study how a firm's position within a network can influence its opportunistic behavior, hence opportunistic behavior is the dependent variable according to the research question.

### **2.1.7 Empirical Studies**

Opportunism has been an emerging topic in inter-firm relationship management (e.g. Wathne and Heide 2000). Much of the research has focused on strategies to curb the occurrence of opportunistic behavior between exchange partners (e.g., Geyskens et al., 1999; Wathne and Heide 2000). Empirical research (e.g., John 1984) maintains that opportunism weakens relationships between partners and reduces total outcomes for the long term. Centralization refers to the concentration of decision-making authority, and formalization refers to the use of explicit procedures to govern a relationship (John and Reve 1982), Dwyer and Oh (1987) propose that centralization attempts to eliminate opportunism by limiting behavioral discretion, whereas formalization removes transaction difficulties and constrains opportunism. By limiting self-control and autonomy, opportunism might be promoted (John 1984). Coordination refers to purposive activities to share resources and information between exchange parties (Reve and Stern 1986). Coordination reduces opportunism by adapting to contradictions and problems, and establishing congruent goals (Buvik and John 2000).

Wathne and Heide (2000) study the forms, outcomes and solutions of inter-firm opportunism. They present some industry cases that have been described by researchers as

involving opportunism of various kinds. As formal contracts often play a limited role in inter-firm relationships (e.g. Macaulay 1963), the lack of contractual details enables a party to exploit loopholes either passively, by shirking responsibilities not covered by formal contract; or actively, by participating in activities that unilaterally improve the party's term of trade. In both forms of opportunism, the party can benefit from immoral behavior by gaining more margin. Two conditions were mentioned in this paper that facilitate opportunism: a lock-in situation, and information asymmetry. A lock-in situation will increase tolerance of opportunism, while information asymmetry can increase the difficulty of detecting opportunism. Possible governance strategies are provided to manage opportunism from four perspectives: monitoring, incentives control, selection ex ante, and socialization. All these strategies have different mechanisms to limit opportunism; however, all strategies share the same effect of reducing information asymmetry.

Heide and John (1988) expand the TCA approach with dependence theory, to study how firms can safeguard transaction-specific assets in a principal-agents relationship. Transaction-specific assets have a positive impact in creating abnormal profits in a certain relationship, but is non-redeployable or less valuable in alternative exchange relationships (i.e. the party made transaction-specific investments depends highly on the receiver). Transaction-specific assets pose a contractual hazard for the agency. TCA regards integration as the best strategy to mitigate opportunism. However, vertical integration is not operable when exchange parties are incomparable on assets holding, size, power, etc. Heide and John proposed "offsetting investments" made by agents; offsetting investments are made for bonding with downward customers. As a result, principals will take precautions when they want to switch to a certain agent, because the agent may take away the bonding customers at the same time. Offsetting investment makes the principal-agents relationship less asymmetric. Data from 199 manufacturers supports their expectations that dependence of principal arising as offsetting investments have made it harder to switch agents.

Rokkan, Heide and Wathne (2003) expand TCA with social norms, to investigate how specific investments function to incentive of opportunism. In general, norms are codes of conduct that either prescribe particular behaviors for parties or discourage behaviors by defining them as illegitimate in the context at hand (Coleman 1990; Gibbs 1981). The particular norm of solidarity is referred to the willingness of parties to strive for joint benefits (e.g. Heide and John 1992; Kaufmann 1987). According to TCA, investment on specific assets will increase the possibility of opportunism, since it creates the lock-in

effects. The empirical study of relationships between manufacturers of building materials and their independent distributors proved that, under a strong norm of solidarity, increases in specific investments will limit opportunism. The result is not consistent with traditional TCA's conclusion. On the contrary, under a weak norm of solidarity, specific investment will promote opportunistic behavior of the receiver. To sum up, the level of the solidarity norm has opposite effects on the relationship between opportunism and specific investments.

### **2.1.8 Summary**

In this part, I provide an overall introduction of TCA and opportunistic behavior. TCA is one of the main theories supporting the thesis. I reviewed related literature and presented the basic logic and assumptions of TCA in the beginning; limitations of current study is also provided. Opportunistic behavior is the phenomenon I am going to investigate according to the research question, therefore I paid more attention to explaining the notion of opportunism. I also presented the forms of ex post opportunistic behavior, and outcomes of each form.

To end this section, empirical studies were presented. I presented the paperwork by Wathne and Heide (2000), and highlighted two factors that promote opportunism: information asymmetry and lock-in. Possible solutions are mentioned as well: for example, Heide and John (1988) propose the offsetting investments to balance the relationship between principal and agents. Rokkan, Heide and Wathne (2003) state that, according to TCA, specific investment may promote opportunism. However, when a solidarity norm is high, specific investments will in verse reduce opportunism. I then summarized some mechanisms to limit opportunism, such as creating a high level of solidarity norm, making offsetting investments to bond with downward customers.

## 2.2 Inter-organization Network

### 2.2.1 Introduction

Around 30 years ago, studies on networks emerged as an important new area of interest within the field of entrepreneurship. Network is an imported notion from computer science and network science. Inter-organization network (hereafter, network) has been a prevalent topic recent decades in business world. Network provides accessibility to knowledge, resources and information beyond a firm's boundary, which increases flexibility for discrete firms. The purpose of this chapter is therefore to go through the definition and occurrence of network; reasons for network formation, its benefits and shortcomings will be discussed. Empirical findings related to the research question in this discipline will also be presented.

### 2.2.2 What is inter-organization network?

The term 'network', by original definition, is an abstract notion to a set of nodes and relationships that connect them (Fombrun 1982). Brass, Galaskiewicz and Greve (2004) also define network following a similar idea as "a set of nodes and the set of ties representing some relationship, or lack of relationship, between the nodes." Following the definition mentioned above, organizations are the nodes in networks, and relationships are the ties between different organizations. Different definitions have been given to networks as scholars emphasize different aspects (e.g., firms or relationships). For example, networks can be regarded as sets of connected firms (e.g., Astley and Fombrun 1983; Miles and Snow 1992) or, alternatively, as sets of connected relationships between firms (e.g., Cook and Emerson 1978; Håkansson and Johanson 1993). Networks exist as a social structure between a "visible hand" and an "invisible hand": beyond dyadic relationships but far from the market. In this proposal, I am not trying to offer an all-encompassing definition of a network. Instead, I am going to follow the basic definition provided by Fombrun (1982): a network is a social structure consisting of isolated organizations and the relationships between them. Therefore, network is a relatively wide concept, and consists of more than two actors. Regional cluster, alliance partners, supply chains, and business unions can all be viewed as networks.

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### 2.2.3 Why do firms form networks?

As Word (2009) stated, a business network is far more than the business itself. The dawning of a new economic era is considered to be one of the most important causes of networks. Network pictures are mental representations of firms' relevant business environment. With the rise of the global market and an increasingly fierce competitive environment, such that enterprises are increasingly dependent on external resources, the network that was formed by companies becomes one of the most effective way to get access to external resources (Gulati 1999). There are four mainstream schools that give the causes of the formation of network, and also present some main outcomes of networks.

#### *Resource-based Theory*

Resources are all assets, capabilities, organization processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness. (Barney 1991:101). Resource-based theory views firms as portfolios of heterogeneous resources, firms whose boundaries make the ownership clear. The key logic of the resource-based view is: these resources (what firms have) decide the activities (what firms do) that firms can conduct, and finally come to a different result (what firms get).

Those subscribing to the resource-based view analyzed the formation of networks based on strategic alliance (Duncan 1982; Hagedoorm 1993). Scholars emphasized the importance of resource endowments (Barney, 1991), and explained that the reason of strategy alliance is resource heterogeneity. Andrews (1971) interprets strategic behavior of enterprises as the result of the balancing ability of enterprises dealing with the external environment; this ability of enterprises would then facilitate alliance. Binding by the changes, a resource-based perspective considers the possibility that enterprises could acquire competitive advantage not only by internal resources, but also through inter-firm relationship, network identification, and access to external complementary resources (e.g. Pfeffert and Salancik 1978; Gulati 1995; Powell, 1996). Richardson (1972) considers business network as a key method for enterprises to acquire external complementary resources.

### *Organizational Learning Theory*

According to Dodgson's (1993) review of existing literature, organizational learning is the way in which an organization creates and organizes knowledge relating to their functions and culture. Organizational learning happens in all organization's activities, and varies in speeds. The goal of organizational learning is to successfully adapt to changing environments, to adjust under uncertain conditions, and to increase efficiency.

Some scholars believe that network is an elongation of innovation and R&D (Powell, 1996), and explain the formation of network from the perspective of organizational learning (Gulati, 1998). Networks are considered to be a catalyst of organization learning, as they can accelerate knowledge transfer so as to promote inter-organization learning (Hamel, 1991), as well as integrating existing knowledge and create spillover effects (Vitt & March, 1988; Powell, 1990; Uzzi, 1996). Enterprises longing to acquire new knowledge, technology, and know-how, make it possible to share some risks through networks, and sharing the benefits from the value chain (KaPasuwan, 2004).

### *Socio-economics Theory*

The term 'social economics' may refer broadly to the "use of economics in the study of society." How social relations affect behavior and institutions is one of the classic questions of social theory (Granovetter 1985). More narrowly, contemporary practice considers behavioral interactions of individuals and groups through social capital and social "markets" (not excluding for example, sorting by marriage) and the formation of social norms (Becker and Murphy, 2009). Recently, it has focused more on the relation of economics to social values (Jess, Alberto, and Matthew; 2011). Social influence could be viewed as an external force, altering organizations' way of making decisions. Polanyi (1957) used the concept of embeddedness to describe the social structure of modern markets, while Granovetter (1985) revealed it as the robust effect on economic action, particularly in the context of inter-firm networks. Social factors resulting from embeddedness of firms in a rich social context could be influential to give opportunity to the set perceived.

After scholars and entrepreneurs "imported" the concept of network from sociology into inter-firm relationships, the formation mechanism of networks started to flourish. Coleman (1988) studies network from social capital point of view, treating networks as an important part of organization's social capital that established by relationships and alliances. According to Morrissey, Tausig and Lindsey (1985), research shows that a majority of

relationships in networks were based on client referrals. Social capital that comes from networks could correspondingly increase the value of human capital. This statement was first published on <The Strength of Weak Ties> by Granovetter in 1973, which has a significant impact on the field of social network, laid the theoretical foundation of social network theories. Economic sociologists believe that relational embeddedness would affect economic behavior (Granovetter, 1985). Even though Granovetter's research focus on interpersonal ties, the results are widely applicable to the relationship between social entities such as organizations, teams, or enterprises.

### *Institutional Economics Theory*

Institutional economics focuses on understanding the role of the evolutionary process and the role of institutions in shaping economic behavior. Institutional economics emphasizes a broader study of institutions and views markets as a result of the complex interaction of these various institutions (e.g. individuals, firms, social norms). Institutional economics focuses on how regulations influences economic behavior and economic development, and respectively how economic development influences the evolution of institution.

Network formation does not fit neatly into either the market or hierarchy frameworks proposed by Coase (1937), since it matches the hybrid structure between these two extremes. Transaction cost theory initiates firms to complete discrete transactions in the best efficient way; therefore scholars following this school believe that networks made it possible for enterprises to escape from bureaucratic shackles, as well as market failure. Thorelli (1986) analyzed network content and nature, and he believes that network is the intermediary between individual firms; network can be viewed as a submarket formed due to the transaction frequency between different firms. Barney and Ouchi (1984) present the measurability of performance and the difficulties detecting and controlling it; network encourages self-restraint but will require some external monitor at the same time. McGuire (1988) and Davis (1991) conclude that there is the presence of agents characterized by risk aversion, whereas network provides a possible channel to diversify risks. Powell (1990) compares three governance structure (i.e. market, hybrid and hierarchical) in various dimensions like regulation basis, regulation means, conflict resolution and flexibility; he concluded that a network ensures stable trading for organizational forms between the market and the hierarchical. Ring (1992) and Van de Ven (1994) analyze how uncertainty acts on

the dependence of trust, and then seek to find out the competitive advantage of network in transaction governance; they proposed that under a middle level uncertainty, network can achieve efficient governance of transactions. Therefore, network is a necessary form to balance the market and hierarchical governance.

#### **2.2.4 Empirical Studies**

Much extant empirical research in network has been conducted; the results have been mixed. Advantages and disadvantages related to the research question will both be presented in this part. Research has been done in both network-level and network content factors (e.g. network density, diversity).

Empirical research on network shows that social relationships and the networks that organizations constitute are influential in explaining the process of knowledge creation, transfer, and adoption. Enterprises longing to acquire new knowledge, technology, and know-how, make it possible to share some risks through business networks, and sharing the benefits from the value chain (KaPasuwan 2004). Network functions as the pipeline of information and knowledge sharing. Nicholls-Nixon (2000) discovered that enterprises within the same network sharing similar the level of management and technology could have better learning effect. As firms are holding symmetric resources, the consequent of cooperation will be the best. KaPasuwan (2004) note that the ability of absorbing knowledge through networks are not only affected by isolated organizations, but also the formation of an inter-organization network. Beyond network theory, Kapasuwan (2004) also points out the importance of the breadth of the inter-organization network, the degree of <that which is> embedded, knowledge redundancy and network globalization.

A long stream of study suggests that organizations enter networks in response to challenges posed by interdependencies that shape their common environment (i.e. eliminate exposure to risk) (e.g. Pfeffer and Salancik 1978). Widely defined, environment dependence embodied two sets of considerations: resources procurement and uncertainty reduction (Galaskiewicz 1985). Organizations enter a network to access resources and knowledge that are essential to achieve their business goal but that are in part under the control of other organizations in their environment; for example, supply chain networks. In other words, network is therefore a means by which organizations manage their dependence on other organizations in their environment and attempt to mitigate the uncertainty generated by such



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dependence. Meantime, Gulati and Gargiulo (1999) interviewed some managers and notice that firms observe their partners activity and share available information to other actors within networks. This referral and associated reputation effect may constrain improper behavior. Therefore, the monitoring cost to control partners' behavior is reduced due to the information flow and potential damage of reputation.

On the other hand, networks also have shortcomings through empirical study. An investigation conducted by Goerzen and Beamish (2005), in studying 290 MNEs, concludes that network diversity weakens economic performance. This negative effect insinuates that the challenge of managing in an increasingly complex network would overwhelm the marginal benefits. There is also a difficulty when forming relationships or entering a network: due to limited information ex ante about the competencies, needs, and reliability (Van de Ven 1976; Stinchcombe 1990), thus it is hard to decide with whom to enter such ties. While network can be a good means to manage environment uncertainty, there is also considerable uncertainty associated with entering into those cooperation ties. Uzzi (1997) propose that network structures that are comprised of only arms-length ties or embedded ties decrease organization performance. Not all networks are beneficial for organizations; there could be negative effects since they might have some willful ignorance of opportunistic behavior due to a high degree of trust.

### **2.2.5 Summary**

This section focuses on network theory, which has attracted the attention of both managers and academics. This exists as a common scenario for most firms to achieve their goals even though they may not achieve it alone easily, especially when competition is increasingly fierce. In contrast, embedding in a network may require more adaption which increases the costs. In this chapter, I first briefly reviewed the definition and introduced the occurrence of network based on different perspective. I further expanded on the social embeddedness theory since it is one of the supporting theories of this proposal.

I then proceeded to describe outcomes of networks. A number of advantages have been uncovered. For example, (a) create more flexibility under explicit uncertainty; (b) achieve efficient governance of transactions; (c) reduce monitoring costs; (d) acknowledge risk sharing. However, disadvantages of network are also provided. For example, (a) high level of diversity may decrease economic performance due to managerial complexity; (b)

exposure to higher explicit uncertainty while being embedded in networks; (c) willful ignorance due to high degree of trust could create economic loss.

## 2.3 Network Centrality

### 2.3.1 Introduction

Empirical studies have indicated that network characteristics may not only influence the type or direction of member firms' decisions (e.g., whether or not to adopt a particular practice, the type and frequency of communication), but also the quality of those decisions (Goerzon and Beamish 2005). Drawn from network analysis literature, a variety of measurements have been introduced to reveal patterns within business network that can be used to identify the distinguishing positions of organizations or their ventures in networks. Factors like size, diversity, density, and centrality have been isolated and shown to have impact on organizations' capability and performance. Centrality is the main concern of this proposal. Therefore, the purpose of this chapter is to provide a comprehensive introduction of centrality, and explain how to measure an actor's centrality within a certain network. After that, there will be a contribution to understanding organizations capability and behavior, together with empirical findings that will also be attached in this discipline.

### 2.3.2 What is network centrality?

To what extent are one or few organizations in the network considerably more centrality connected to others? Centrality was operationally defined as "aggregate prominence" (Knoke and Burt 1983), which is a measure that indexes centrality as a function of the centrality of those to whom an individual is connected through direct and indirect links (Bonacich 1987). Centrality is the most studied factor in network, and can be considered in both network level and organization level. Network centrality measures the number of other actors a member can reach within a certain network. As for the organization level, centrality can be viewed as an important measure of network position. This factor explicitly includes the ability to access (or control) resources not only through direct ties but also indirect ties. The degree of centrality describes the ability of an actor to "reach" other actors in the network through intermediary "bridges". Due to the difficulties of collecting relationship data from all actors within a network, network centrality has generally been less developed than network size. Here I will only study organization level centrality.

There is one point that needs to be emphasize about centrality: centrality of an actor in a network can be defined as its structural importance for the network (S.P. Borgatti, Everett,

& Johnson 2013), hence it is not the absolute value but a relative value. When studying centrality, it is necessary to compare it to the other actors embedded within the same network. For example, a removal of an actor with relatively high centrality from a network might lead to weakening of network connections or even disconnection of part of the network. The measurement of network centrality will be discussed in depth in the next part.

### **2.3.3 How is network centrality measured?**

While this part simply focuses on centrality and network flow, content related to inter-organization relationship will be given little concern. Centrality measures make implicit assumptions about the manner in which traffic flows through a network. There are numerous measures that have been developed, the best known four measures including degree centrality (Freeman 1979), closeness centrality (Freeman 1979), eigenvector centrality (Bonacich 1972), and betweenness centrality (Freeman 1979).

#### ***Degree Centrality***

According to Freeman (1979), degree centrality can be defined as the number of ties that are incident upon a node. It measures the numbers of paths that emanate from a node, counts on the arms-length and direct relationships within network. As a result, this measure would be in terms of an implicit process that involves no indirect links.

Another implication of this measure is, a measure of immediate effects only – if something happens at time  $t$ , what will happen at time  $t+1$  only. For example, if a certain node A in the network is infected with something, and having a tie with an infected node implies getting infected, then the probability of immediate infection is a function of number of nodes that node A is adjacent to. Therefore, by analogy, we can explain degree centrality as a measure of immediate influence - the ability to infect others directly or in one time period.

#### ***Closeness Centrality***

Closeness centrality, defined by Freeman (1979), is the sum of graph-theoretic distance from all nodes, where the distance from a node to another is defined as the length (in links) of the shortest path from one to the other. In flow context, we ordinarily interpret closeness as an index of the expected time until arrival of something flowing through the network (Borgatti, 1995). Closeness centrality measures the shortest distance from node A to node B, which can be interpreted as the speed of receiving network flows sending by other

nodes. If assuming that: (1) flows originate from all other nodes with equal possibility, (2) all flows will only travel through the shortest paths; therefore, nodes with low closeness score will tend to receive flows sooner. To better understand closeness, we can explain it as the time of receiving network flow. Take information flow as an example, normally nodes with low closeness score are being well positioned to obtain novel information early, when the information is the most valuable. Thus, organizations with low closeness in an R&D technology-sharing network are able to launch new products compared to others. On the contrary, individuals with low closeness in a sexual network will get infected earlier than others.

If traffic does not travel to the shortest path, the interpretation of time to receiving network flows no longer stand. For example, we might be tempted to understand closeness as an index of reception speed for flow receiving. However, if the flow is a gossip rather than a commodity, this does not transfer through the shortest path; then, the rank ordering of who receives information first on average will not match the ordering given by closeness centrality measure. In addition, the assumption about the shortest path should also combined with reachability, which we call it valid path.

### *Eigenvector Centrality*

As Bonacich (1972) defined, eigenvector centrality is the principal eigenvector of the adjacency matrix defining the network. The defining equation of an eigenvector is

$$\lambda v = Av$$

Where  $A$  is the adjacency matrix of the graph,  $\lambda$  is a constant (the eigenvalue), and  $v$  is the eigenvector. To simply interpret the equation, the high eigenvector will lead to a high score in adjacency. Eigenvector centrality contains two parts, one part uses a one-dimension array to store all information within each of the nodes; the other part uses a two-dimension array to describe relationships between each nodes. Mathematically, eigenvector centrality is closely related to the measures proposed by Katz (1953), Hubbel (1965), Taylor (1969), Hoede (1978), Coleman (1966), and Friedkin (1991), and almost all of these are known as influences measures. For network, the idea is that even if a node  $A$  influences only one node, who continuously expands this influence to many other nodes (who themselves still influence other nodes), then the original node  $A$  is highly influential in that network. Eigenvector centrality highlights the greatest possible extent a node can effect (not limited

by direct tie), measuring total influence within a certain network. At the same time, eigenvector centrality provides a scenario of risk exposure. For example, assume a person A stays in a sexual network and may have sex just with one person B, but if person B has sex with many other people, then the risk to person A remains very high.

### *Betweenness Centrality*

Betweenness centrality is defined as the share of times that a node  $i$  needs a node  $j$  (whose centrality is being measured) in order to reach the node  $j$  via the shortest path. Specifically, if  $g_{ikj}$  is the number of geodesic paths from node  $i$  to node  $j$ , and  $g_{ij}$  is the number of geodesic paths from node  $i$  to node  $j$  that pass through node  $k$ , then the betweenness centrality of  $k$  is given by

$$\sum_i \sum_j \frac{g_{ikj}}{g_{ij}} \quad i \neq j \neq k$$

To put this in a more direct way, betweenness in centrality basically counts the number of geodesic paths that pass through node  $k$ . Compared to three measures above, eigenvector centrality is the only direct numerator measure. The denominator indicates that there are many geodesic paths from node  $i$  to node  $j$ , and node  $k$  is along the route with some of them. Therefore, betweenness centrality is testing essentially the mediator node's share of all paths between pairs that utilize node  $k$  – the exclusivity  $k$ 's position. Therefore, betweenness centrality is conventionally thought to measure the volume of traffic moving from each node to every other node that would pass through a given node (Borgatti, 1995). Betweenness centrality provides a situation such that with the removal of nodes with a high betweenness centrality, it is possible to shut down some network flow paths. In sum, it measures the *replicability* of a certain node.

Two assumptions must be satisfied under this measure. First, the traffic travels through the shortest path; second, the traffic is indivisible. For both these two assumptions, the measure is not suitable to test a flow like information or infection. Rather, the assumptions built on this measure match the characteristics of commodity delivery.

According to definition of each type of centrality, closeness centrality has emphasis on the farthest distance an actor can reach, which is not the main concern in this proposal. Eigenvector centrality pays attention to direction, which has little connection to the research question. Degree centrality simply sums up the total amount of ties within network, which is

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insufficient to describe the position's outcome. *Betweenness centrality* is more suitable to the measures in this proposal: it captures the structural importance and possibility to replace a certain actor, which is most relevant to the research question.

### 2.3.4 Empirical Studies

Centrality is an emerging topic in exploring network contents; many studies have been done over time. Since centrality is an aspect of network, the centralized actor will have all benefits from network. As information can be conceptualized as a kind of network resource, one of the main benefits of embedded within network is the accessibility of resources beyond organization boundaries. It is proposed that high centrality of a company in a network promotes high volume and speed of assets, information, and status flows (Galaskiewicz 1979). A central actor can enjoy benefit from the resource asymmetry in the network, which could lead to great access to external assets from the connections, including money, technology, and information. It is obvious that a higher centrality actor within a dyadic alliance will benefit more from the cooperation. The group's success and ability to solve problems, together with the perception of leadership and satisfaction of the members with the outcomes, is closely connected with the centrality concept (Freeman, 1979). This notion has been proved through a range of sociological experiments (Krackhardt, 1992), industry studies (Czepiel, 1974), and even analysis of countries' origins and development (Pitts, 1965). Moreover, due to higher status and power stemming from a central position (Wasserman and Faust, 1994), the more centralized actor may have higher bargaining power over other members, and significantly increasing its chances of success. Centralized actor has a higher possibility of taking control and performs as leaders in a group, and makes a network governance mode move towards the hierarchical (e.g. Bavelas, 1950; Leavitt, 1951; Shaw, 1964; Davis, 1969). Also, studies have indicated that a more centralized actor could have higher likelihood to enter a new alliance as it acquires more valuable information compared to rest of the actors (Gulati, 1999).

However, we cannot just focus on the positive impact of centrality, it also has a dark side. A centralized actor will have better accessibility to information; the actor can make the most use of information to find a proper potential partner within the network. This will correspondingly limit the actor's horizon, as information of non-participants of the network is not provided; otherwise central actors may block themselves out of new opportunities (Gulati, 1999). Peterson and Rajan (1994) propose that though many studies hold that social

structure has significant impact on economic behavior, it can also minimally affect economic transacting or create inefficiencies by shielding the transaction from the market. The more centralized this process, the more possibility that the actor will bond itself within a certain network, and move away from an efficient market. Van de Ven (1976; p.28) suggests that firms within inter-organization relationships need to invest scarce resources and energy to develop and maintain relationships with other organizations, when the potential returns on this investment are often unclear and intangible. Centralized actors are often more involved in network relationships, and invest more resources and energy into the network, which could be regarded as an opportunity cost. As a result centralized actors may pay more attention to relationships governance and give less concern to their own business.

### **2.3.5 Summary**

This part focuses on centrality, which is the main network content I am going to study in this proposal. It has been an emerging field when analyzing network structure, and has significant impact on individual organizations. In this chapter, I first summarized the existing literature and presented the definition of centrality. Due to the difficulties in measuring centrality, then I explained the most accepted four measures of centrality: degree centrality, closeness centrality, eigenvector centrality, and betweenness centrality. Based on the research question, the most suitable type of centrality is that of betweenness centrality.

I then proceeded to describe benefits and limitations of centrality. A number of advantages have been uncovered. For example, (a) a centralized actor has better accessibility to resources; (b) a centralized actor has more probability to create above normal revenue compared to partners; (c) a centralized actor has better bargaining power and control rights; (d) a centralized actor has better possibility of entering new alliance.

Unavoidably, centrality comes with pitfalls. Shortcomings of centrality are provided before this chapter ended with empirical findings in the field of network. For example, Gulati (1999), Peterson and Rajan (1994) argues that the central actors' better accessibility may limit their horizon and unwillingness to search for external information beyond the network; hence, losing the efficiency of market-level transaction. Also, centralized actors will invest more resources and energy to relationship maintenance, which may not give the same amount of payoffs.



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## 2.4 Power Theory

### 2.4.1 Introduction

Inter-organizational power and its exercise are of vital importance in relationship management between firms. It operates closely with the bargaining process in the exploration and expansion phase of inter-organization relationship development (Dwyer et al., 1987). Power is a crucial topic for both managers and academics; it can directly influence the efficiency of exchange governance and the ability to negotiate with partners. In this proposal, power is used as an intermediate links between centrality and opportunistic behavior. In this chapter, therefore, I will explore the extant studies related to the research question.

### 2.4.2 Power Definition and Determinance

Power is the property of social relations (Emerson 1962). Power has many conceptualizations in different fields. In this proposal, I am going to narrow the scope of power, and focus on power in social science and politics. Power, in social science and politics, is the *ability* to influence or control outright the behavior of people. The term “authority” is often used for power perceived as legitimate by social structure (Greiner and Schein 1988). According to French and Raven (1959), power is the state of affairs which holds in a given relationship, A-B, such that a given influence attempt by A over B makes A’s desires change in B more likely. Following the logic, power is a relative variable - it depends on the specific understanding of A and B as they each apply to their relationship. One of the key determinants of power, according to sociologists, is dependence. Emerson (1962) suggests that the power of A over B is equal to and based on the dependence of B on A. Dwyer (1984) states that dependence and power “rests on the extent to which B is dependent on A for valued resources” (p.682). Pfeffer and Salancik (2003) argue that dependence comprises three elements. “First, there is the importance of resource, the extent to which the organization requires it,...second is the extent to which [the other party] ...has discretion over the resource..., and third, the extent to which there are few alternatives... ” (p.45)

It has been argued that inter-organizational power depends heavily on organization size, which expressed through control over the rules governing exchange, the ability to

choose a "do without" strategy, the effectiveness of coercive strategies, and the concentration of inputs (Oliver 1990). In other words, if a firm relies heavily on its exchange partner who possesses important resources like capitals, information, products, or status to create rewards and benefits that are not easily to be replaced (Dwyer et al., 1987; Scheer and Stern, 1992), then that exchange partner has a lot of power towards the firm (Emerson 1962). As a result, a firm possessing and controlling valuable assets, information and resources has more possibility to obtain power.

### **2.4.3 Source of Power**

Extant research on sources of power have been made by French and Raven (1959), and they identify power into five forms: reward power, coercive power, legitimate power, referent power, and expert power.

Some studies use a much simpler classification to divide power into *coercive* power and *non-coercive* power. Coercive power is the application of negative influences, normally includes threats and promises (e.g., Frazier and Rody 1991; Frazier and Summer 1986). In social psychological literature (e.g. French and Raven 1959), promises are not regarded as a coercive power because they draw on reward power. Although there is some literature (e.g., Frazier and Summer 1984, 1986) that explores promises as a coercive power because, similar to threats, promises do not attempt to alter the target's perceptions of the inherent desirability of the intended behavior response. Consistent with this, Frazier's data in several studies indicate that threats and promises lead to the same factor. In contrast, study Boyle and Colleague's (1992) study which reveals that although threats and promises are positively related, the effects on rationalism is different.

Non-coercive power refers to power that brings positive impacts such as rewards, professional advice and valuable information sharing; as well as focus on "the beliefs and attitudes of the target rather than directly on the target's behavior, and the source does not mediate the relationship on the basis of the target's response" (Frazier and Rody 1991). Other studies prove that using non-coercive power may take considerable time to implement effectively (Frazier and Summer 1984; Kasulis and Spekman 1980). As a compensation, firms that exploit non-coercive power can expect returns from exchange partners, contributing to the supportive exchange atmosphere (Frazier and Rody 1991).

In order to avoid the overlapping part of promises in coercive power and reward power, I would like to use punitive power instead of coercive power in power typology given by French and Raven (1959); hence, making promises align to reward.

***Punitive power*** refers to the granting of aversive consequences, or penalty, as well as the withdrawal of desirable consequences (Hinkin and Schriesheim 1989). To possess punitive power, a firm might possess destructive resources that can create wounds to an exchange partner (Molm 1989). Firms with higher coercive power have the ability to deliver negative consequences to its exchange partner; in this case, such behavior is called punitive action (Gaski and Nevin 1985). Firms might develop its punitive capability by investing in the systems that control the withdrawal of valued resources and/or the release of destructive resources and having the ability and willfulness to deliver negative consequences to an exchange partner.

***Reward power*** is the degree to which the individual can give others a reward of some kind such as benefits, time off, desired gifts, promotion or increase in pay or responsibility.

***Legitimate power*** occurs when an actor is perceived to have a legitimate right to influence its partner who is obligated to comply with these influences. There are two types of legitimate power in inter-organization relationship: traditional legitimate and legal legitimate (Kasulis and Spekman 1980). Traditional legitimate power is more common in hierarchical governance, a relatively larger firm may feel better empowered and have more right to influence policy setting in some situation; while legal legitimate power is based on contractual agreements that all exchange partners exercise their legal rights in the governance of their exchange.

***Referent power*** is closely related to social ties, and adjusted by an exchange partner's desire to associate with certain partners. Some exchange partners will feel pride to have connection with certain firms, and will be willing to be influenced by them. This kind of power has a high possibility to occur in a centralized network, since the central actor controls most important information and resource flow.

***Expert power*** occurs when a firm perceives that its exchange partner is knowledgeable about certain fields and allows its exchange partner to influence its behaviors and decisions.

*Information power* refers to the ability to (a) provide information that is previous unavailable to its exchange partner; (b) to interpret the information into understandable knowledge but not yet known by its exchange partner (Raven and Kruglanski 1970).

#### **2.4.4 Occurrence of Power Exercise**

When will firms exercise power in a relationship? Dwyer et al. (1987) break down the inter-organization relationship development process into five general phases: (1) awareness, (2) exploration, (3) expansion, (4) commitment, and (5) dissolution. Power exercise is a sub-phase in exploration process. As soon as a firm takes a liking to a potential exchange partner, a relationship enters the exploration phase as a firm consider all aspects of exchange, for example the benefits, obligations, and possibility of different contingencies. These tentative ideas are conceptualized in five sub-phases: (1) attraction, (2) communication and bargaining, (3) development and exercise power, (4) norm development, and (5) expectation development. After parties finish with the attraction phases, the relationship moves to the second and third sub-phase simultaneously, since bargaining and power exercise are jointly processes. Moreover, the empowered party normally plays the leader's role and contributes the most to norm construction. Exchange partners rearrange their mutual distributions of obligations, benefits and burdens. Power has a strong impact on bargaining in order to acquire concessions.

#### **2.4.5 Scale of Power**

Power is a relative value, therefore it needs to be compared. According to John and Heide (1988), there are at least three means to increase power towards exchange partners through dependence.

First, the level of dependence is increasing as the outcomes obtained from a relationship are important or highly valued, or the exchange magnitude itself is high. In other words, if a specific actor occupies a large fraction of an exchange partner's business, this actor will have high power towards its partner. Several scholars have proved this notion of magnitude and/or importance of exchange to describe dependence (e.g. El-Ansary and Stern, 1972; Pfeffer and Salancik, 1978).

Second, as dependence is increasing, a certain relational earning becomes relatively higher than outcomes from alternative relationships. Take any supplier as an example, a firm

that is dealing with the “best” supplier (in quality, price etc.) and more dependent since the outcome with the supplier is the best compared to other lower performance supplier. Firms will always go to the best supplier since it is the first option among all alternatives. The notion of role performance (Frazier 1983) or comparison outcome levels has been used as the basis of dependence in a previous study (e.g. Anderson and Narus 1984).

Third, the dependence of the focal party is increasing when fewer alternative sources of exchange is available. The notion of concentration refers to exchange with a particular party, especially when it is hard to find a same quality party to replace it. Prior empirical studies use the notion of the ability to replace as a way to describe the possibility of finding a substitute, and as a measure of dependence (e.g. El-Ansary and Stern 1972; Etgar 1976). This phenomenon has been proved by both empirical and conceptual study (e.g. El-Ansary and Stern 1972; Pfeffer and Salancik 1978; Etgar 1976). This idea is consistent with the *betweenness centrality* measure, because both notions are seeking for substitute or alternatives in exchanges.

#### **2.4.6 Power Asymmetry**

Power asymmetry is the difference between exchange partners’ power, which can affect both attitude and behavior (Bacharach and Lawler 1981; Lawler 1986). In this proposal, asymmetric power is paid particular attention. Empirical findings prove that asymmetric relationships are less stable and beneficial than symmetric ones (e.g. Kumar, Scheer and Steenkamp, 1995). Therefore, even though an empowered firm may enjoy more benefits (e.g. decision-making power, bargaining power) compared to its partner within a certain relationship, there is a possibility that this relationship may not maximize the total profit.

A firm holding more power is expected to exploit its exchange partner by frequently using coercive power (Robicheaus and El-Ansary 1975). It is hard to act against the power, and less powerful firms will be more likely to tolerate bad behaviors by powerful partners and care less about equity since they lack alternatives and statutes; switching exchange partners is more difficult and costly for them. Under this condition, studies have proved that a less powerful firms do not, or barely attempt to retaliate (Blalock and Wilkin 1979; Bucklin 1973). On the contrary, a more powerful party normally has little tolerance when confronted with the use of coercive power as they have more alternatives (Frazier & Rody,

1991). Prior research shows that the possession of power is likely to increase the possibility of a firm to act opportunistically by gaining a share of the profit from an unfair exchange (e.g. Dwyer and Walker 1981; Frazier and Rody 1991; Frazier, Gill and Kale 1989; Kale 1986; Wilkinson and Kipnis 1978).

### **2.4.7 Empirical Studies**

Many empirical studies focus on the exploitation of power on governance inter-organization coordination. For example, John (1984) focuses on opportunistic behaviors and examines their determinants in franchise relationships. Franchise is suitable to study asymmetric power effects; franchisors normally hold more power compared to franchisees. In his research, opportunism has been viewed as an endogenous variable that is evoked by certain antecedents. Results show that power between exchange partners has impact on a firm's attitudinal and opportunism. Opportunistic behavior will be promoted by using reward and punitive power. These two types of power are using a direct control pattern – punishment and rewards, to achieve effects. When reward and punitive power are used, the incentive of the receiver will be reduced. In this case, an exchange partner's motivation towards interaction turned out to be less favorable. The degree of unwillingness to cooperate and disaffection increases, while shared belief decreases.

Geyskens, Steenkamp and Kumar (1999) study marketing channel relationships, and they noticed that hierarchical governance structure (in channel members) in favor of the partner fostered great use of threats and promises by partner (i.e. coercive power) and lesser use of non-coercive power. This can be interpreted as firms holding more power will be more motivated to exploit such power for own interest, but less willingness to administer goodwill. Also, this study shows that there was a low level of their own dependence (i.e., more of a reliance on other firms) which fostered lesser use of threats and promises by the partner, but provided greater use of non-coercive power. Weaker firms have less opportunity to exploit coercive power, but have more goodwill to its partner. Hence, firms that have more "authority" have higher possibility to use coercive power towards its partner. Together with the result given by John's (1984) study, opportunistic behavior will be promoted by using coercive power; hence firms holding more power will have higher chance to behave opportunistically.

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Hunt and Nevin (1974) also study franchising relationships in fast-food chains and noticed that a high power actor will only exploit its coercive power when the use of non-coercive power fails to give a satisfy response. Moreover, the exercise of power depends on the source of power exercised. A franchisee's satisfaction will increase when non-coercive power (e.g. professional assistant, quality examination, job training, etc.) is used; and decrease when coercive power (e.g. control of land, restriction of the right to sell, etc.) is used. Consistently with the findings of Frazier and Summer (1986) in franchising relationships, coercive power will be used only when manufacturers are forced to do so. When coercive power is used, it means that non-coercive power failed to achieve the desired results. If the coercive strategy is used frequently in the inter - firm relationships, the shared beliefs between exchange partners should be relatively low (Etgar, 1979; Gaski & Nevin, 1985; John, 1984).

#### **2.4.8 Summary**

This chapter focuses on inter-organizational power theory, which plays pivotal roles in relationship governance. Power has been given much attention by both managers and academics, because it may direct influence the concessions or resources accessibility. In this section, I first define what inter-organization power is. Then I proceed to describe the source of power, and provide the classification of power from two points of view.

Power exercise is also introduced in this section; this is done in order to illustrate when power will occur and what consequences power can create relatively. Since power is a relative measure, I introduce how the scale of power changes according to value, dependence and alternatives.

Asymmetric power is paid particular attention to in this chapter, since this research proposal focuses on the effects of asymmetric power caused by different position of individual firms in a same network. A firm with relatively high power is expected to exploit its exchange partners by frequently using coercive power, while a firm with low power is prone to tolerate such coercion. When coercive power is used, the possibility of opportunistic behavior increases.

This section ended with empirical findings. Much research pays attention to the use of power for obtaining effective coordination, such as (1) power between exchange partners has

impact on a firm's attitudes regarding opportunism; (2) parties that have more power will have higher possibility to use coercive power, but less willingness to use non-coercive power. Conversely, parties that have less power are more willing to use non-coercive power compared to coercive power. In a different vein, Hunt and Nevin's (1974) study shows that coercive power will only be used when there is an incompatibility, which makes non-coercive power invalid. This result is consistent with the study conducted by Frazier and Summer (1986).



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## 2.5 Summary of Theoretical Background

This chapter provides a theoretical background of TCA and opportunism, network and centrality, and inter-firm power. For decades, TCA has been a widely accepted perspective to explain the inter-organization relationship governance structure, and furthermore proposes the notion of opportunism. Following the logic of TCA, specific investment will increase the possibility of opportunism, because of the lock-in situation. The harder to replace a certain partner, the more likely is the possibility of opportunism that the partner might have. Opportunistic behaviour may happen when both motivation and chance exist. Related research provides triggers for opportunism, as well as suggestions of how to eliminate such behavior.

With regard to network theory, it provides the background for this research question. Network is a structure that emphasizes accessibility but weakens the ownership of resources, assets, and information etc. Meanwhile, network is the social environment a firm survives in; some scholars view network as a firm's opportunity set. Network provides an external constraint and monitoring of a firm's behavior. In this proposal, I focus on a firm's position inside a network (represented by the degree of centrality) function on its opportunistic behavior. Network represents the macro factors that cannot be missed.

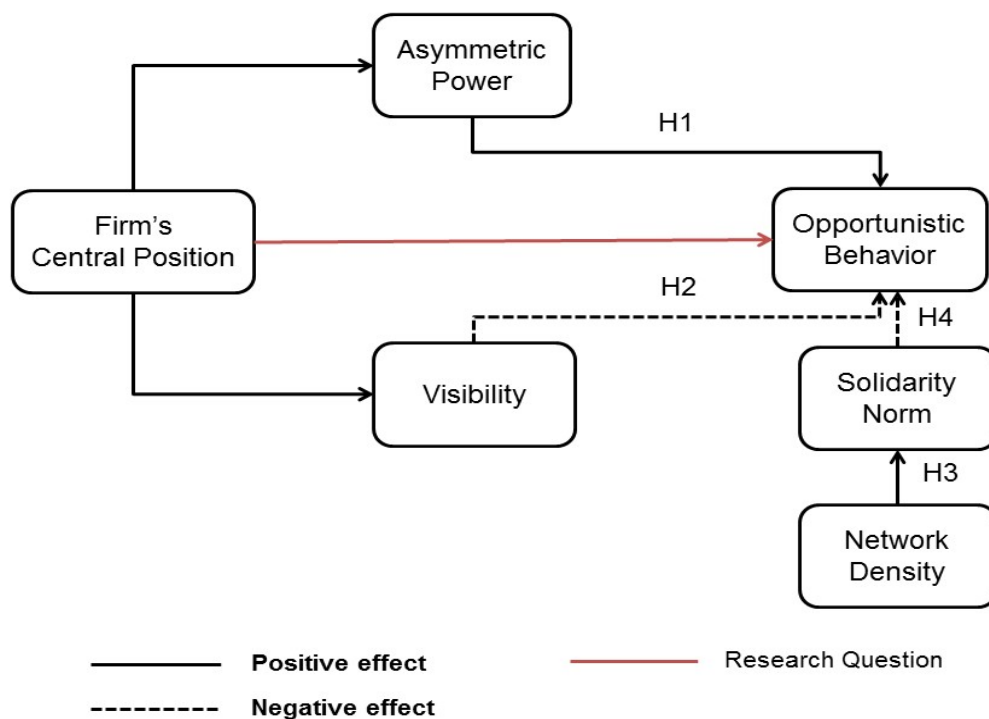
Power theory provides the theoretical support of asymmetric power generated by dependence. A centrally located firm normally holds more power; respectively, the chance of opportunistic behaviour will increase. Power corruption has long been a hot issue in such an inter-firm relationship. Empirical studies have proved that the party holding more power ~~have~~ has better incentives and a better chance to perform opportunistically.

These three theories together construct the conceptual framework that will be discussed in next chapter.

### 3. Conceptual Framework and Research Hypotheses

#### 3.1 Introduction and Conceptual Framework

Figure 3-1 Research Model



In this chapter, I am going to present the conceptual model in detail using theories and empirical studies stated above. Figure 3-1 shows the conceptual model, the red line refers to the research question I am going to study. The black solid line refers to the positive effect (i.e. increase), while the black dashed line refers to the negative effect (i.e. decrease). Four lines in the figure indicate four separate hypotheses, interpreting different effects that function to encouraging opportunistic behavior. In this conceptual model, opportunistic behavior all refers to ex post one.

In this conceptual model, centrality is the independent variable; opportunistic behavior is the dependent variable. Asymmetric power and visibility are used as mediators that help to explain the functions. Network density and the Solidarity norm are contingencies in the conceptual model; the solidarity norm is used as the mediator of network density.

Hypotheses 1 and 2 are the two main hypotheses; while hypotheses 3 and 4 denote the possible effect brought by contingency. Hypotheses 1 and 2 emphasize on firm-level effects, and these two mediators (asymmetric power and visibility) create the conflict scenario towards the occurrence of opportunistic behavior of the centrally located firm.

Moreover, when bringing in network density as a contingency, the effects may change accordingly. Network density is another configuration of network content that has been discussed frequently. Empirical studies (e.g. Macneil 1980) show that dense network promotes relational governance. As a result, the norm within a dense network will increase. Inspired by the empirical study by Rokkan, Heide and Wathne (2003), I conjecture that there would be a monotonic result.

The following part will give a detail explanation for each hypothesis.

### **3.1.1 A Central Firm's Opportunistic behavior Via Aymmetric Power**

The centrality of a firm is used to describe a party's position and linked relationships within network. It explains the structural importance of a certain firm, and describes the substitutability of the firm. When the firm occupies a central position, it is indicating that the firm can have a better chance to benefit from the resource asymmetry in the network, which would lead to greater access to external assets from the connections, including cash flow, know-how, and other important resources. Central actors frequently serve as a bridge that link up other actors, therefore they tend to be hard to be replaced. The level of dependence is increasing when fewer alternative sources of exchange is available. (John and Heide 1988). The higher level of dependence exists, the more power a central actor may obtain.

Transaction cost theory (Coase 1937; Williamson 1985) assumes that all economic organizations have the possibility to behave opportunistically for their own interest. This assumption has implications for firm managers whose partners violate contracts both actively and passively (Wathne and Heide 2000). Within a dyadic relationship, it is costly to

monitor such behavior, unless specific investment has been made (i.e., the lock-in effect exists). The risk of opportunism will always exist, but it is hard to know who will or not ex ante.

For example, if two firms A and B can only exchange through another agent firm C, the two firms are highly dependent on the agent firm. In this scenario, firm C functions as a structure hole. Firm C is highly valued in the exchange between firm A and B. According to studies related to dependence theory, firm A and B have the motivation to keep good relationship with firm C since they have few alternatives once they need to continue exchange with each other. Dependence will increase power; whereas the ability to replace is an equally important factor that will increase inter-firm dependency. Firm C, at this point, is the most powerful actor in the network which consists of firm A, B and C; if C chooses to quit the network, then firm A and B can no longer continue transactions. If the intermediate firm C is an opportunistic exchange partner, firm A and firm B may choose to tolerate such bad behavior rather than punish or switch to another exchange partner; because they have little alternative. In contrast, for firm C, the switching costs is low and other options are available; the restrictions of behaving opportunistic is negligible. This creates a unilateral “lock-in” situation, and enables the empowered actor to opportunistically exploit or expropriate others according to their value.

There is another scenario, in which less powerful firms do not want to tolerate the strong firm’s bad behavior, and they start to seek another solution. However they noticed that firm C controls their most important information and resources; even though they can exploit their legitimate power to terminate the contract, it is still so time consuming to get accessibility to the information and resources they need. They can choose to wait and find another way out, but the result may not turn out to be their expectation. The outcome of alternative partner would be less compared to the previous one. Dependence is increasing, as certain relational earning becomes relatively higher than outcomes from alternative relationships (John and Heide 1988). If firm A and B give up struggling, and go back to firm C again, firm C can exploit its bargaining power over other members and significantly increase its marginal advantage. A firm holding more power may have the potential to exploit its exchange partner by frequently using punitive power to punish such an exchange partner, and thereby create unpleasant situations which may hurt partner’s benefit.

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Moreover, if a firm wants to safeguard itself and make efforts to monitor a partner's behavior; despite the costs, firms are powerless to control an exchange partner who is stronger. Centrality also implies control over resource acquisition of others because central individuals can choose from a greater number of alternative individuals when exchanging beneficial resources. Switching to another exchange partner might be unrealistic, and might actually result in higher costs or suffering marginal loss due to lost quasi-rent (quasi-rent refers to that additional income which is temporary; Williamson 1979). While Williamson (1985) merely suggested that the probability of opportunism occurring increases as asset specificity increases, some scholars interpret it as lock-in or bonding effects (e.g. John and Heide 1988; Rokkan, Heide and Wathne, 2003). Central position actor could be hard to be replaced due to high degree of dependence by its exchange partner, and able to create the same scenario. Under such a situation, the central actor has more power, and there are few external hindrances to monitor its opportunistic behavior. Both the incentives and the chance to behave opportunistically will be high. Such an actor can exploit all possible information and resources, and make unfair bargains, invoke cheating, misinformation or other improper means to maximize its own margin. Along with the idea provided by Wathne and Heide (2000), both information asymmetry and lock-in situation will facilitate opportunism.

Accordingly, the following hypothesis is proposed:

**Hypothesis 1:** *For a given firm, the more central a position that it occupies (within a network structure), ceteris paribus, the more asymmetric power it will gain, and hence increase the possibility of opportunistic behavior.*

### **3.1.2 Central Firm's Opportunistic behavior Via Visibility**

The main logic of TCA is, choosing the most cost efficient governance structure among the market, the hierarchy and a hybrid. Network is just matching the hybrid governance structure, between the market and the hierarchical. However, despite the growing acceptance and popularity of TCA, there are crucial obstacles to its successful applications. Under the TCA perspective, transactions do not have cross-impact; rather, the only determining factor of governance mode is transaction costs. TCA has a tendency to omit "relationship", or previous exchanges and communication. Under dynamic conditions, entrepreneurs are seeking for information that can help to secure the underlying potential of business activities. Firms always want to have a reliable exchange partner to decrease the

possibility of opportunism. Entrepreneurs seek legitimacy to reduce this perceived risk by associating with explicit certification from well-regarded organizations. Positive comments on a firm's network linkages could have a positive impact on subsequent resource exchanges. Such relationships will spur start-up activities for other potential entrepreneurs (Calabrese et al., 2000). Hence, entrepreneurs would make their best efforts to collect existing information about potential exchange partners. Empirical study proves that firms have the tendency to seek new partners within a network as they could have better accessibility to relative information compared to the market. Within a network structure, it is easier to acquire information of reputation or morality before the transaction has started.

Within a network structure, the most easily observed actor must be the central actor; in other words, the central actor is more *visible*. In meteorology, visibility is a measure of the distance at which an object or light can be clearly discerned. Just like at a traffic light, with more automobiles passing by, there is a better chance to be seen. Higher visibility of central organizations can enhance their attractiveness to potential partners (Gulati and Gargiulo 1999). Meanwhile, these will receive more attention. A central firm, then, due to its structural importance, will deal with exchange partners more frequently, and communicate with more parties; as a result, this firm will receive more comments from partners. In other words, the central actor is scrutinized by more partners; even a small improper action could be observed and announced to other partners. Hence, firms in a central position may have less incentive to behave opportunistically.

As one of the most valuable intangible assets, any damage of reputation might be a deadly blow. There have been many big names that have suddenly suffered a lot due to poor reputation; as central actors, more comments will be given by exchange partners and the possibility of having bad comments is high. The best strategy is to avoid such a situation, and instead to act in a proper way and not to abuse power. Hence, a central actor may be more cautious when given the chance to behave opportunistically; because the negative impact may outweigh the margin it can gain from such behavior. Individual firms may have the possibility to have a one-time transaction and no longer contact the exchange partner; but in a network, all firms are embedded in the network and the exchange of information and resources is ongoing. Centralization attempts to overcome opportunism by limiting behavioral discretion, whereas formalization removes transaction difficulties and constrains opportunism (Dwyer and Oh 1987). This will alert a firm not to have negative comments or

a negative image, since it could discourage potential exchange partners or discourage a business opportunity.

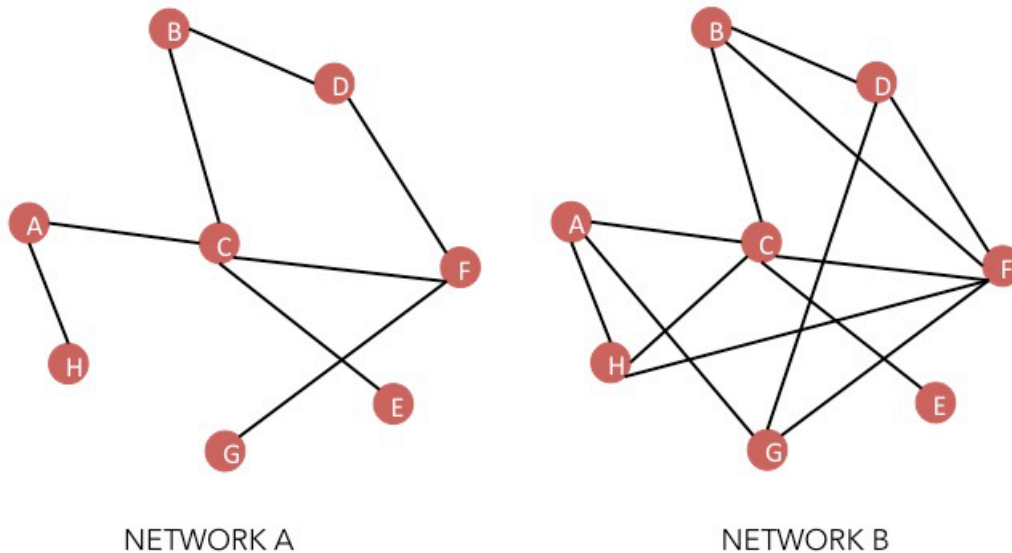
Moreover, central actors normally play the leader role in any given network; they are the people who set the rules for the network and behavior benchmarking (Tracey, Heide and Bell 2014). According to empirical studies, a high centralized network has a better possibility to use a hierarchical governance structure. The Central actor will normally default to have the responsibility to act as an authority, and to guide its partners' performance. All other members will pay special attention to central actor's behavior and try to imitate their behavior or understand what kind of behavior is proper in some situations. Hence, once the central actor behaves opportunistically and is caught by other members, they may misunderstand such behavior as correct or acceptable. As a consequence, the whole network will follow this distorted standard given by the leader, and all network actors will then lose their profit due to a wrong performance standard. Therefore, they have the principle to behave with self-restraint and avoid improper actions; the central position will reduce a firm's incentive to behave opportunistically.

Accordingly, the following hypothesis is proposed:

**Hypothesis 2:** *For a given firm, the more central position it occupies (within a network structure), ceteris paribus, the more visible its action will be, and hence reduce the possibility of opportunistic behavior.*

### 3.1.3 Network Density and Opportunistic Behavior Via Norm

Figure 3-2 Network Density



Network density is defined as the relative number of ties between the members of the network and is specified as the ratio between all existing ties and all possible ties if all the members in the network were connected (Rowley, 1997). Figure 3-2 gives an example of network density, network B is denser compared to network A. Node C is a central actor in both networks. Obviously, network B has more existing ties, and provides more possible paths to connect separate nodes. Density is the broadest and simplest of the measures and refers to the number of direct organizational connections maintained by individuals in the network, as a proportion of all possible network links (Provan, 1993).

When analyzing opportunistic behavior, only the consideration of the effects of the position of a firm within network structure is insufficient. Network density is included in the research model as a contingency. Higher network density facilitates greater access to other members, which along with the formation of the shared relationship norms (Gnyawali & Madhavan, 2001; Tracey, Heide, & Bell, 2014) can induce establishing a sustainable alliance within the network. Within a dense network, firms have more chance to know their partners and accelerate trust through exchange and communication. Study has proved that dense



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network will promote relational governance (Macneil 1980), as a result, a denser network can create higher level of the accepted norm.

Norms are expectations about behavior that are at least partially shared by a group of decision makers (Gibbs 1981). Norms can apply to different levels: entire societies (Axelrod 1986), particular industries (Macaulay 1963), individual firms (Dornbusch and Scott 1975), or group of individuals (Bettenhausen and Murighan 1985). Macneil (1980) divides exchange norms into “discrete” and “relational”. Basically, a discrete exchange norm covers the expectations about exchange partners’ behavior, with more focus on the partner’s autonomous and self-attainment when pursuing individual goals. In contrast, relational norms refer to expectations of mutuality of interest, especially prescribing governance behavior, and are designed to ensure that the relationship continues to be healthy. Therefore, relational exchange norms may need time to run and accumulate. When firms are exchanging with partners, they can generally know and adjust to each other through discrete transactions. This phenomenon can have positive impacts on relational exchange norms. Norms usually function as guidelines of proper behavior; therefore, the better it is understood, the less possibility of improper behavior. Moreover, norms serve as a general protective device against deviant behavior (Stinchcombe 1986).

Here, I am going to focus on a particular relational norm – norm of solidarity. The particular norm of solidarity is referred to the willingness of parties to strive for joint benefits (e.g. Heide and John 1992; Kaufmann 1987). They proposed that the level of solidarity norm will counteract with the incentives of opportunism. In practice though, a solidarity norm manifests itself in the form of a “we” feeling or shared identity between exchange partners (e.g. Macneil 1980). A particular function of the solidarity norm is to consolidate the idea that they treat the network as a whole, thereby curtailing behaviors promoting self-interest seeking. By a firm’s very nature, relational norms constitute a safeguard against exploitative use of decision rights (John and Heide 1992). Being in a central position, a firm will have a better understanding of such a solidarity norm, and emotionally reject actions that would hurt the whole network. Centralized actors are often more involved in network relationships, and invest more resources and energy into the network (Van de Ven 1976). Therefore, even with holding a higher right to speak in decision making, firms under strong solidarity norms will have less incentives to behave opportunistically because they have to be conscious of proper behavior.

Accordingly, the following hypothesis is proposed:

**Hypothesis 3:** *For a given network, the higher degree of density, ceteris paribus, the more solidarity norm within the network.*

**Hypothesis 4:** *For a given network, the higher level of a solidarity norm that it has, ceteris paribus, the lower possibility of (firm's) opportunistic behavior occurrence will be.*

## 4. Discussion

I will now develop an extension of the basic TCA model from literature (e.g., Williamson 1985). I use the extension to understand how a firm's position within network structure can influence its opportunistic behavior.

The basic thrust of the model is that the social environment has been an emerging topic for long; therefore, when firms are embedded in such a social structure, will they change their nature? All managers would like to avoid these partners' opportunistic behavior, but it can be so hard to know until you are aware of its occurrence. Within such a network structure, a centrally located firm will enjoy asymmetric benefits but will be inspected (or monitored) by more partners. It is hard to postulate if that central firm may have more incentives to abuse its resources and power, or will decide to be more cautious with regards to improper behavior.

### 4.1 Theoretical Implications

It has been proved by many empirical studies (e.g., Galaskiewicz 1979) that a central firm within a network structure can enjoy better access to resources, information and assets. A centrally located firm is viewed as the leader in such a network (Bell, Tracey and Heide 2009), hence it has more power towards other parties. Other actors in the same network may rely heavily on the central firm, and may have succumbed to its coercion. Power corruption has been discussed a lot, and even though there are well-behaved leaders, the possibility of the abuse of power is still significant. Geyskens, Steenkamp and Kumar's (1999) study shows that any organization holding more power has more incentives to exploit its coercive power. Hence, when there is little control mechanism, and the outcome of using asymmetric power is positive, normally, the central actor will choose to behave in favour of their own interest.

In contrast, a central firm has been scrutinized by several more partners, thus they will behave with caution. Structural importance pushes central actors to dealing with exchange partners more frequently compared to other actors, and respectively they receive more comments from partners. Entrepreneurs seek legitimacy to reduce this perceived risk by associating with explicit certification from well-regarded organizations. Centralization

makes it possible to overcome opportunism by controlling behavioral discretion, whereas formalization removes the transaction difficulties and constrains opportunism (Dwyer and Oh 1987). A central firm will face a higher level of risk of bad comments or reputation if its action was regarded as improper. The damage may outweigh the benefit gained from such opportunistic behavior. The central firm may be more cautious to behave opportunistically due to a higher chance of being caught.

However, the external control of opportunistic behavior of a central firm is a “soft” one, such that it relies more on the central firm’s conscious. Even though the central actor is caught behaving opportunistically, there could be two possible scenarios: (1) the central firm is punished, or (2) the central firm is not punished since a less powerful firm does not have the ability to do so. Even in the first scenario, the central firm could recover faster as it is holding more information and resources. The less powerful firm could have suffer more because it has less of an alternative if the central firm quits from the exchange. Therefore, the central firm has less fear in exploiting the asymmetric power for their own interest. Based on this idea, the effect of hypothesis 1 may outweigh the effect of hypothesis 2.

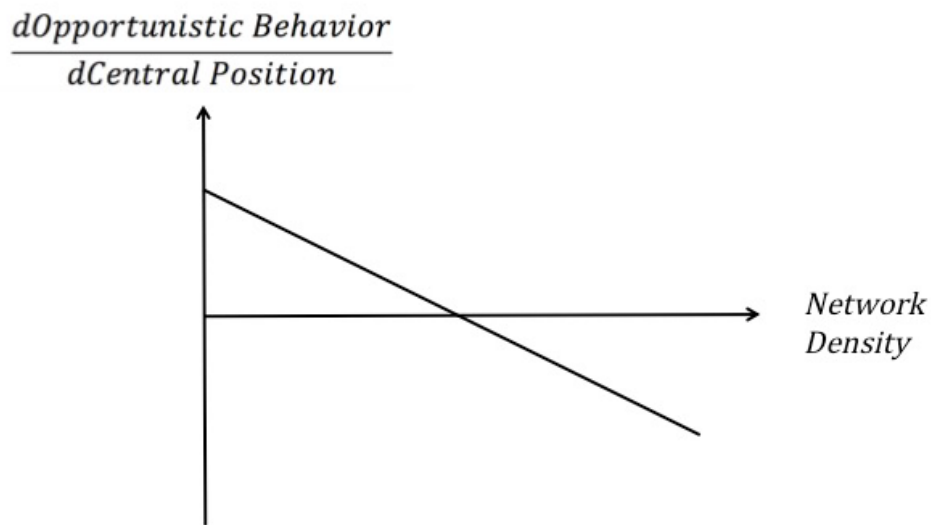
To conclude, based on current knowledge, I would like to assume that the central firm will have a better possibility to behave opportunistically. However, there is the possibility of the effect according to hypothesis 2 that the condition is stronger than hypothesis 1 in magnitude. Consistent with this theory, both hypothesis 1 and hypothesis 2 are valid; however the magnitudes remain unknown. The relationship between a firm’s opportunistic behavior and its position within network structure is indistinct so far.

When including network centrality as the contingency, the situation is different. A dense network will have higher level of solidarity norm. Rokkan, Heide and Wathne (2003) conducted an empirical study about specific investment and opportunism, according to TCA, in which the specific investment can promote opportunism because it creates a “lock-in” situation, which is similar to the ability to replace of the central firm. Their study provides that when the solidarity norm is high, specific investment will curb opportunism; however under a low solidarity norm, specific investment can promote opportunism.

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**Figure 4-1 Impact of Solidarity Norm on the Relationship  
Between Opportunistic Behavior and Central Position**

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Parallel to this logic, I assume that, a dense network will have high level of a solidarity norm, such that the central firm will have better self-constraint to behave properly. In contrast, a network that has lower density will have a low level of solidarity norm, while the central firm will have more incentives to abuse its convenience and behave opportunistically. The impact of such a solidarity norm on the relationship between the firm's position and opportunistic behavior can be described by using a monotonic relationship (See Figure 4-1).

## 4.2 Limitations

Firstly, I recognize that the construction of this research model is only a portion of the potentially relevant variables that might have been included. Opportunistic behavior is a broad topic, and may have many mechanisms that actually promote or curb its occurrence from different perspectives. In order to be more precise, I was constrained in selecting network configurations that were related most frequently to opportunistic behavior according to existing literature according to my limited knowledge. Therefore, the model could be expanded to include more configurations of network content such as network diversity.

Secondly, network density is used as a contingency in the research model, I limit the effects and only consider the effect on the relational norm. The mechanism existing in the real situation could have many more possibilities. For example, the network density may have impact on a firm's visibility within network structure. The research model presents quite limited mechanisms to answer the research question, whereas omitted mechanisms could be added in.

Third, limited by both time and resources, I am not able to conduct the empirical study related to the research model. Therefore, I can only give a theoretical implication according to my limited knowledge. The reality of the situation may not consistent with the theoretical implication. Moreover, some variables used in the research model are abstract, and hard to be measured if gathering data, such as asymmetric power. These kind of variables need to be concretized, to make it measurable when conducting empirical study.

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