The Effects of Hierarchy on Boundary Spanners’ Communication

By

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Abstract

This thesis aims to explore the communication role of boundary spanners within and between their organizations. The theoretical model in this research focuses on how the organizational hierarchy affects inter-organizational communication and subsequently the function of boundary spanner in supply chain management. This research collected data by surveying boundary spanners in 278 Chinese companies. The data were analyzed by using a path analysis. The findings suggest that organizational hierarchy negatively affects boundary spanner’s communication. This thesis also offers suggestions for organizations to leverage on the organizational hierarchy.

Keywords: Hierarchy, Communication quality, Procurement, Boundary spanner, Organizational communication
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Chapter 1  Introduction

The current study focuses on the role of communication in supply chain management and the procurement process in the context of China.

In recent years, many scholars have paid attention to inter-organization communication between organization (Basch et al., 2018; Du et al., 2012; Friedkin, 1982; Liu et al., 2015; Murshed et al., 2015). Researchers have reported that interorganizational communication affects many aspects of supply chain outcomes. For example, Holma (2012) argued that successful purchasing activities require internal interaction and communication with external business partners. Joshi (2009) also suggested that collaborative communication between trading partners could optimize supplier performance.

In this study, I am particularly interested in the effects of organizational hierarchy on the interorganizational communication. Such communication is mostly conducted by boundary spanners. As suggested by Tushman and Scanlan (1981), a major role of boundary spanners is sharing information with trading partners. Specifically, boundary spanners serve a dual purpose in interfirm communication, acting as both filters and enablers of information (Aldrich and Herker, 1977). Therefore, their performance greatly determines their firms’ supply chain performance such as information sharing and relationship maintenance, which are antecedents of positive organizational performance (Li et al., 2006).

Boundary spanners play critical roles in interfirm interaction, as they coordinate interfirm cooperation, respond to external contingencies, and preserve long-term
relationships (Cai et al., 2022). As suggested by Wang et al. (2020), interactions between boundary spanners could affect supply chain performance by facilitating key strategic elements such as institutional benefit, external resource procurement abilities, and distribution channel. Due to their importance, in recent years, scholars begin to pay attention to the factors influencing boundary spanner performance. Many have investigated the influence of intraorganizational factors on boundary spanners (De Regge et al., 2020; Johlke & Duhan, 2001; Liu et al., 2018; Marrone et al., 2022; Wang et al., 2022). Their findings suggested that organizational support is one of the key factors affecting boundary spanner performance. For example, the supervisors’ supportive-coaching behaviors could support boundary spanners who work in ambiguous and uncertain environments (Marrone et al., 2022; Johlke & Duhan, 2001). It is also found that the perceived supports from organizations and supervisors are positively associated with boundary spanning behaviors in companies (De Regge et al., 2020). Similarly, in this study, I focus on how one key aspect of organizational support, namely, internal listening, affects how boundary spanners serve their functions, especially interorganizational communication.

I further argue that internal listening in an organization, such as organizational listening and supervisor listening, is greatly affected by hierarchy. Arguably, such listening could be regarded as communication-based organizational support. Prior studies have shown that hierarchy, as an organizational structure, significantly affects intra-organizational communication (Greer et al., 2018; Jacobides, 2007). For example, Greer et al. (2018) proved that hierarchy negatively affects the coordination enabling process in teams, which requires team members communicate more frequently to accomplish the
team goals. Renani et al. (2017) argued that an adequate and suitable organizational structure improves an organization's flow of information. In contrast, an inappropriate structure may reduce harmonization among employees and managers at different levels of the organization, and thus jeopardize intraorganizational communication. In the same vein, I intend to study whether organizational hierarchy also affects organizational and supervisor listening, which subsequently affect boundary spanners’ performance, such as interorganizational communication.

As mentioned, boundary spanners play a critical role in maintaining and facilitating interorganizational relationships. Especially, several studies have found that communication between them greatly affect supply chain outcomes. Qian et al. (2021) showed that interorganizational communication conducted by boundary spanners is positively related to operational and supply chain performance. Zhang et al (2011) also suggested that strategic communication between boundary spanners facilitates supply chain performance and increases supplier’s trust in the buying firms. Accordingly, in this study, I maintain that organizational hierarchy affects internal listening, which subsequently affect interorganizational communication conducted by boundary spanners, as well as supply chain outcomes.

I empirically test my research model in the context of China. I collected data from 278 purchasing managers through an online survey. The collected data was analyzed by using path analysis.

This thesis is structured as follows: It starts with the theoretical background of the research (Chapter 2), which introduces major concepts and theories that form the basis of the current study. Chapters 3 presents my hypothesis and research model. It is followed
by research methodology (Chapter 4). My analysis results are presented in Chapter 5. Discussion of the results and the conclusion are presented in Chapter 6 and Chapter 7.
Chapter 2  Theoretical background

In this section, the theoretical background of this thesis will be introduced. Specifically, I will introduce the major concept of the current study, including power distance and organizational hierarchy, boundary spanner, and intraorganizational communication. Finally, I will discuss social exchange theory, which is the foundation of the research model and hypotheses.

2.1 Power distance and Hierarchy

2.1.1 Power Distance

As suggested by Hofstede (1980, p.98), power distance refers to the inequality in power between a less powerful person and a more powerful person. Between two individuals, power distance assesses interpersonal power or influence as perceived by the least powerful of the two. Hofstede (1980) has specifically developed a power distance index (PDI).

Power distance is related to the decision-making process (Hofstede, 1980). According to Madlock (2012), power distance affects the extent to which individuals prefer to be told what they should do and how by those in higher power positions than themselves. High power distance, as a culture norm, could legitimize differences in decision-making power between those in high power status and those in low power status (Madlock, 2012). Similarly, Matusitz and Musambira (2013) argued that in a high-power distance environment, individuals are more likely to obey the norms and rules and less likely to
follow their own will. In other words, people are less independent in high power distance societies.

Liu and Liao (2013) showed that employees who work in less power distance environments were more likely to voice their opinions than those who work in high power distance companies. They suggested that power distance is directly related to social perceptual distance, which affects followers' interactions with leaders, for example, the extent to which they are willing to speak up to leaders. Especially, power distance is found to be negatively related to communication (Matusitz & Musambira, 2013).

Madlock (2012) argued that individuals in high power distance work environments might become unconcerned, distracted, and disengaged in communication dialogues with their leaders.

In this article, I will discuss the effects of hierarchy mainly from the perspective of power distance in organizations. Hierarchy often reflects power distance in an organization. The higher the power distance between employees, the less likely they are going to share information or interact with each other. As such, hierarchy could negatively affect organizational communication.

2.1.2 Power in hierarchy

According to Bunderson et al. (2016), a social group's hierarchy reflects the concentration of power, status, or privilege in the hands of a single individual or a small subset of the entire membership. Hierarchies in human groups are less about physical dominance but more about who has influence over whom or, put differently, who defers
to whom when it comes to decisions and actions that concern the direction of the group (Joshi & Knight, 2015).

In the context of business organizations, Mulder et al. (1971) maintained that a company is a domination or power structure, and the hierarchy of power is its most vital element. Similarly, Hofstede (2001; 1980, p.92) defined hierarchy as the formal separation between two people in an organization and suggested that it varies across different cultures. He argued that, in companies, inequality in power is inevitable and functional. Such inequality is often formalized in hierarchical supervisor-subordinate interactions. Therefore, in organizations, hierarchy generally signifies the relationships between power and decision-making (Meske et al., 2020; Jacobides, 2007). Firms with low power distance cultures typically have fewer hierarchical layers and a higher degree of employee engagement in decision-making (Mustafa et al., 2022).

It is suggested that the distance between people, whether geographical or hierarchical, negatively impacts their ability to work together (Johlke & Duhan, 2001). Therefore, it is not surprising that hierarchy could affect many aspects of business operations. In this study, I am particularly interested in its influence on communication. Meske et al. (2020) proposed that hierarchy is associated with the formal oversight and management of employees. Particularly, hierarchical structure coordinates the official flow of information inside the organization, shaping its communication patterns. Similarly, Powell (1990) pointed out that an organization's capacity to coordinate complex tasks and efficiently manage resources depends on its ability to organize its workforce into hierarchies.
2.2 Boundary spanner

Boundary spanners are employees of an organization communicating professionally with a person who is not a member of the organization (Robertson, 1995). Boundary spanners may interact and develop relationships with their counterparts by engaging in various activities, including communicating, negotiating, developing trust, networking, and resolving organizational conflicts (Aldrich & Herker, 1977; Coleman & Stern, 2018). Prior studies have shown that boundary spanners play a critical role in relationships between buyers and sellers. They facilitate knowledge sharing, information/knowledge transfer, and innovation-focused activities between organizations. Their performances are especially important for global organizations, which need to coordinate various activities across various intra- and inter-organizational boundaries. (Cai et al., 2010; Dolmans et al., 2022; Poblete & Bengtson, 2020).

As suggested by Aldrich and Herker (1997), boundary spanners carry out two types of tasks: information processing and external representation (Huang et al., 2016). First, regarding information processing, boundary-spanner is responsible for information selection and delivery for trading partners. By doing so, they also promote knowledge exchange across organizations (Cai et al., 2010; Coleman & Stern, 2018; Dolmans et al., 2022; Kapucu, 2006). Their interorganizational information sharing activities typically consists of two steps: gathering information from external units and sharing it with internal users (Huang et al., 2016; Tushman & Scanlan, 1981; Williams, 2022). As such, they are essential in establishing connections across various cooperation units or regional contexts, especially in terms of incorporating external local knowledge and promoting
intra-cooperation information flows to close perception and information gaps (Minbaeva & Santangelo, 2018).

Second, external representation refers to establishing linkage between multiple organizations (Coleman & Stern, 2018; Guven et al., 2020; Minbaeva & Santangelo, 2018; Zaheer et al., 1998). As argued by Coleman and Stren (2018), boundary spanner acts as a bridge between two or more constituencies (Hoffmann-Longtin, 2022). Especially, when it comes to procurement, buyer and supplier may establish a particularly strong relationship if the buyer exhibits allegiance to a significant connection at the supplier company (Vafeas, 2010). In other words, the relationship between two parties’ boundary spanners could greatly define the relationship between their firms. Therefore, a successful boundaries spanner must be well-connected inside and outside their organizations, to share information and develop relationships beyond the organizations’ boundaries (Shrum, 1990).

Boundary spanners could play a critical role in determining whether to grant favors to their partner firm, even though the resources involved are owned by the firms rather than the boundary spanners (Cai et al., 2010; Cai et al., 2017). When a boundary spanner and his/her counterpart have a strong bond, the boundary spanner is often willing to go to considerable lengths to encourage his or her firm to reveal sensitive information to the counterpart's company (Cai et al., 2017).
2.3 Organizational Communication

As suggested by Lundberg and Brownell (1993), organizational communication involves message flow, individuals and their relations, attitudes, feelings, and proficiencies. Communication enables employees to pursue organizational goals and objectives, especially the common organizational objective of revenue and advancement (Carroll & Kucma, 2022; Chitrao, 2014).

In this article, I maintain that organizational communication enables employees to reduce ambiguity in the workplace, thereby optimizing their work performance. Arguably, employee performance is greatly affected by the accuracy of the information that they receive, and their satisfaction with communication (Pettit et al., 1997). Furthermore, effective organizational communication could enhance the relational ties among employees, which can be leveraged as a reliable resource to accelerate transactions and eliminate risk (Wei & Liu, 2022). As such, communication could enhance organizational performance.

The following section will discuss internal communication, as well as one key aspect of such communication: internal listening.

2.3.1 Internal Communication

All communication within a company is collectively referred to as internal communication (Santiago, 2020). Internal communication is defined as a systematic exchange of information which is essential for keeping employees informed about the organization's goals, strategies, and ideas (Santiago, 2020). Such communication is
critical for organizations since it influences their ability to motivate workers and accomplish goals (Welch & Jackson, 2007).

Prior studies have reported that internal communication plays a critical role in developing corporate strategy, creating organizational culture, enabling business operations, and preventing internal crises (Malkowska and Vikhasta, 2022).

First, internal communication plays an essential role in the development of organization’s strategy (Pirjol & Radomir, 2016). It is argued that effective internal communication ensures that information is exchanged, gathered, and delivered internally as part of the management system. By doing so, it enables employees to understand their organization's aims and objectives (Kovaite et al., 2020; Santiago, 2020). As such, internal communication serve as a critical mechanism between strategic managers and their organizations, promoting the work commitment and greater understanding of company’s objective (Welch and Jackson, 2007).

Second, internal communication plays an essential role in creating organizational culture (Cardon et al., 2019). Internal communication serves as a critical element in boosting employees' organizational identification and creating a transparent culture that may involve workers in the pursuit of organization's goals (Santiago, 2020; Welch & Jackson, 2007). Therefore, it is argued that internal communication is the key mechanism promoting and supporting an organization’s values and assumptions i.e., organizational culture (Díaz-Soloaga, 2019; Popa, 2020; Verheyden, 2017).

Third, internal communication is essential to the operation of organizations. Internal communication enables the pursuit of a methodical analysis and distribution of information at every stratum simultaneously and coordination in the most effective
manner (Santiago, 2020; Wang et al., 2020; Wang et al., 2022). Moreover, as suggested by Malkowska and Vikhasta (2022), it also promotes employee feedback, peer learning, and participation in decision-making processes. Therefore, internal communication can greatly affect employees’ performances (Pirjol and Radomir, 2016).

Finally, internal communications enable firms to prevent internal crisis (David, 2011; Mazzei et al., 2012). The lack of internal communication in a crisis could create substantial risk for an organization (David, 2011). As suggested by Moore and Seymour (2005, p. 82), internal communication provides cohesion and coherence in crisis situations. Furthermore, it is critical for crisis prevention in organizations (Mazzei et al., 2012). For example, Mazzei et al. (2012) showed that internal communication positively affect an organizations’ capability to handle challenges.

2.3.2 Internal Listening

According to Macnamara (2016), listening is a critical part of organizational communication. It is defined as how organizations and their managers listen to their stakeholders and publics, thereby enabling two-way communication and establishing mutually beneficial relationships (Macnamara, 2016). Stine et al. (1995) argued that effective listening is one of the elements of overall organizational effectiveness and is critical to organizational success. Qin and Men (2021) empirically show that organizational and supervisory listening are positively associated with employee-organization relationships. In this article, I will focus on two critical types of internal listening, namely, organizational listening, and supervisory listening.
Organizational Listening

As a critical part of organizational communication, organizational listening is positively related to employee’s perceived relationships with their organizations (Qin & Men, 2021). According to Macnamara (2019), organizational listening involves the development of mechanisms that enable decision makers to access expertise actively and effectively, and understand, consider and promptly response to all stakeholders. It allows organizations to establish procedure and structures to ensure unaffected two-way communication (Capizzo and Feinman, 2022). Therefore, organizational listening could directly and indirectly determine the relationship between organizations and various stakeholders, including their employees (Men et al., 2022).

Supervisor Listening

Supervisor listening refers to the degree to which supervisors are listening to employees’ proposals or concerns on work-related issues and demonstrating consideration, interest, and care (Lloyd et al., 2017; Qin & Men, 2021; Yang et al., 2021). It plays an essential role in creating a supportive and considerate environment for subordinators to voice their opinions (Cardon et al., 2019; Flynn et al., 2008). Yang et al. (2021) showed that supervisor listening is positively moderating the relationship between voice opportunity and creative process engagement. They suggested that this is because supervisor listening enables organizations to integrate employees’ voice inputs into creative process, which leads to creative performance. In other words, supportive supervisor listening may result in better performance.
2.4 Social Exchange Theory

Homans proposed social exchange theory (SET) in 1958. Homans (1958) defines social behavior as an exchange of not only physical products and materials but also non-physical goods, such as symbols of approval or respect. Later, from the perspective of economics, Blau applied SET to study individual-level emotional exchanges. Blau (1964) maintained that the more unified a group is, the more prized the emotion or activity the participants exchange with one another, and the greater the average regularity of interaction of the participants.

Blau (1964, p.91) defined social exchange as “voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others”. He argued that trust and friendship result from social exchange. Particularly, Blau (1964) argued that social exchange behaviors differ under different conditions. Individuals would engage in exchange when they feel dangerous such as the other standing in front of him with a gun in a holdup. Or people engage in exchange when they are expecting returns from the other.

Social exchange theory focuses on social exchange relationships between people or organizations based on perceived support values (Santiago, 2020). A critical assumption of this theory is reciprocity, which suggests that people reciprocate in proportion to what they obtain from another individual or group (Xu et al., 2022). In recent years, scholars leverage SET to analyze the economic behaviors between and within organizations. For example, researchers have applied SET to analyze organizational citizenship behaviors (Xu et al., 2022), organizational performance (McLeod et al., 2021), perception of personal information disclosure (Urbonavicius et al., 2021), etc.
In this article, I draw on SET to analyze information exchange in inter-organizational communication. According Blau’s (1964) argument, SET is suitable for analyzing the exchange of both physical and non-physical products. In this article, I view information as a non-physical product. The information exchange between parties thus constitutes behavioral exchanges. In interfirm communication, when a boundary spanner offers information or support to a trading partner, reciprocal behavior or information is expected to be provided by his/her counterparts. Additionally, SET could be utilized to analyze the relationship maintenance by organizations and their boundary spanners. Particularly, the theory could be utilized to analyze not only the dyadic relationship between individuals and firms, but also network relationships and supply chain relationships (Can Saglam et al., 2022). For example, Can Saglam et al. (2022) draw on SET to analyze the mediating role of communication quality in the relationship between relational commitment and supply chain performance.
Chapter 3  Research Hypotheses

In this article, I propose that the organizational hierarchy affects two types of internal listening, namely, organizational listening and supervisor listening. I further argue that the two types of listening influence the quality of boundary spanners’ external communication, which subsequently affect supply chain performance. Additionally, I argue that hierarchy negatively affects supply chain performance. The theoretical model is presented in Figure 1.

![Figure 1 Theoretical Model]
3.1 Hierarchy and Listening

As mentioned, hierarchy influences the organizational communication (Brandt, 2020; Renani et al., 2017), especially information processing and flow in organizations (Erjavec et al., 2018; Kovaite et al., 2020; McBride, 2016).

First, hierarchy is negatively related to the upward and downward communication quality in organizations. Roberts and O’Reilly (1974) argued that the existence of hierarchy jeopardizes free communication in organizations. Empirically, Chow et al. (1999) showed that hierarchy negatively influence upward communication in organization. Specifically, they found that the voice of junior employees does not have significant impact in organizations because of their status. McBride (2016) also demonstrated that information could be lost as it moves up the hierarchy due to compression, abstraction, and symbolization. Especially, during the process, details could be obscured or removed; Aggregations and summaries may also simplify messages. Similarly, during downward communication, hierarchy may transform information to simple formats for the purpose of efficiency, which could result in loss of key information (Erjavec et al., 2018).

Second, hierarchy affects the amount of time that individuals need to get ready for voicing their suggestions and opinions (Krenz et al., 2020). For example, Krenz et al. (2020) shows that hierarchical structures, and power dynamics in critical care teamwork act as a barrier to prevent group members from openly voicing issues and suggestions (Krenz et al., 2020). Furthermore, with a strong hierarchy, internal communication often
become increasingly horizontal, with employees communicating and sharing messages among themselves, but not their superiors (Kovaite et al., 2020).

In sum, hierarchy negatively affects internal organizational communication. In this study, I view internal listening, such as organizational and supervisor listening, as a type of internal communication. Therefore, I expect hierarchy to also affect the two types of listening negatively.

First, organizational listening occurs when organization make efforts to understand the thoughts and concerns of employees, thereby providing them with a better work environment (Macnamara, 2016). Hierarchy may make this process less effective. According to Macnamara (2014) and Sahay (2021), proper organizational structure is needed to ensure successful organizational listening by enhancing organization’s cognitive, affective, and behavioral response for listening to individuals. This is because, as mentioned above, hierarchy may prevent effective information flow in organizations. Messages may be distorted, and information may get lost when they are transmitted upward along the hierarchy. Therefore, it is hypothesized that:

*Hypothesis 1: Hierarchy negatively affects organizational listening.*

Second, supervisor listening may occur when supervisors and subordinates communicate with each other. It could be affected by hierarchy because hierarchy creates distance between supervisor and subordinates, thereby preventing effective communication between them (Qin & Men, 2021). As suggested by Kelly et al. (2023), the trust between supervisor and subordinate is critical to the effectiveness of supervisor
listening. However, as hierarchy creates distance between supervisors and subordinates, it could also result in lack of trust between them. Consequently, it will negatively affect supervisor listening.

Furthermore, as reported by Stine et al. (1995), organizational hierarchy may influence employees’ perception on supervisory supportiveness. The stronger the hierarchy is, the less supportive that the supervisors will be viewed by subordinates, and less effective supervisor listening will be. Specifically, they found that supervisory listening supports performance only in organic structure but not in mechanism structure where communication transmit along lines of authority and control. In other words, supervisor listening is less effective when there is a strong hierarchy.

Based on the preceding discussion, it is hypothesized that:

\[
\text{Hypothesis 2: Hierarchy negatively affects supervisor listening.}
\]

### 3.2 Organizational listening and boundary spanner performance

In this study, I argue that organizational listening to boundary spanners could greatly affect how boundary spanners perform their job. Marrone et al. (2022) showed that the organization-wide supportive coaching behaviors, including listening to team members’ voice, would stimulate productive boundary spanning behavior. In their model, the organizational supportive coaching behaviors are indirectly associated with boundary spanning behavior via team member boundary spanning self-efficacy. Drawing on this finding, one may conclude that organizational listening may enhance boundary spanners’
self-efficacy, which subsequently affect their performance, including the quality of their external communication. Furthermore, organizational listening could also ensure that boundary spanners could obtain accurate information and clear instruction, thereby enhancing external communication quality. For example, Liu et al. (2010) showed that organizational listening enables negotiators to attain clarity in communication.

Based on the preceding discussion, it is hypothesized that:

*Hypothesis 3: Organizational listening positively affects boundary spanners’ external communication quality.*

### 3.3 Supervisor listening and boundary spanner performance

An organization may suffer from poor performance if supervisors fail to effectively communicate with their employees. As suggested by Chitrao (2014), ineffective supervisor-subordinate communication may result in misunderstandings, a shortage of information, poor performance, and increased employee turnover. Specifically, Macnamara (2018) argued that a lack of or poor listening skills presented by supervisors could result in a reduction in employee engagement, productivity, and loyalty, as well as greater staff turnover. Since external communication is a major function of boundary spanners, supervisor listening should positively affect boundary spanners’ external communication quality. Therefore, it is hypothesized that:

*Hypothesis 4: Supervisor listening positively affects boundary spanners’ external communication quality.*
3.4 Communication quality and supply chain performance

Prior studies generally suggest that communication quality is critical to supply chain performance. Can Saglam et al. (2022) suggested that high-quality communications could enable supply chain members to obtain comprehensive and reliable information on the supply chain operations and transactions. Liu et al. (2010) also point out that the high quality of communication is essential to business negotiations.

Boundary spanner plays a critical role in the interorganizational communication. Aldrich and Herker (1997) pointed out that a primary responsibilities of boundary spanner is information processing. First, as mentioned, boundary spanners often conduct information selection and transmission for trading partners. By doing so, they also facilitate knowledge exchange between organizations (Cai et al., 2010; Coleman & Stern, 2018; Dolmans et al., 2022; Kapucu, 2006). Second, boundary spanner is the liaison between organizations (Aldrich & Herker, 1997; Coleman & Stern, 2018). A major function of their communication role is connecting an organization’s internal units to external source of information (Tushman and Scanlan, 1981). Therefore, I argue that boundary spanners’ external communication quality greatly determines the overall communication quality between two organizations, which subsequently affect supply chain performance. In particular, I study supply chain performance from supplier’s performance. I measure supplier’s performance related to logistics performance rather than communication quality or frequency of interaction in partnership (Huo et al., 2014).

Moreover, according to social exchanges theory, one party’s efforts for communication will be reciprocated by the other party. Blau (1986, p.91) argue that voluntary behaviors, such as one-party share information valued by the other party, will
promote the other party’s reciprocated behavior. Therefore, I argue that, if buyer’s boundary spanners make efforts to offer high-quality information to the supplier, the supplier and its boundary spanner will make efforts to also provide high-quality information to the buyer. This will facilitate overall interfirm communication quality, and subsequently enhance supply chain performance.

Therefore, based on the preceding discussions, it is hypothesized that:

*Hypothesis 5: boundary spanners’ external communication quality positively affects supply chain performance.*

### 3.5 Organizational listening and supervisor listening

I argue that effective organizational listening facilitate supervisor listening. First, if organizational listening is well established in an organization, it will create an organizational culture that encourage vertical communication in the organization. As suggested by Macnamara (2018), organizations should create a culture that motivate listening in organizations. He further argues that such culture should include seven norms: (1) giving recognition to others as having the right to speak; (2) acknowledging other’s views and voice rapidly; (3) paying attention to others; (4) interpreting what others say fairly and receptively; (5) making efforts to understand others’ views, perspectives, and feelings; (6) giving consideration to what others say; and (7) responding in an appropriate manner. Arguably, as effective organizational listening establishes such norms, supervisors will adopt the norms and apply them to their listening behaviors.
Second, positive organizational listening could also encourage supervisors listening behavior. Once supervisors feel their concerns and feedback are listened by organizations, supervisors are more willing to collect feedback from their subordinates and transmit the feedback to organizations (van der Rijt et al., 2013).

Therefore, based on the preceding discussions, it is hypothesized that:

\textit{Hypothesis 6: organizational listening positively affects supervisor listening.}

### 3.6 Hierarchy and supply chain performance

I argue that hierarchy not only affect supply chain performance by influencing boundary spanner communication, but also exert direct effect on the supply chain performance.

First, hierarchy affects the speed of decision-making process in organization. As mentioned before, hierarchy negatively affects information processing within an organization. Therefore, with a strong hierarchy, it may take an organization relatively long time to process requests from a supply chain partner, and thus responded slowly. Furthermore, Krenz et al. (2020) maintain that hierarchy makes employees reluctant to speak out. Accordingly, I argue that with a strong hierarchy, supervisors need to spend substantial time to collect information and concerns from subordinates, which negatively affect their decision-making speed. In sum, I argue that hierarchy negatively affects how fast an organization can make supply chain related decisions. Effective Supply chain management often require firms quickly respond to changing environment (Can Saglam
et al., 2022). Fast response to changes ensures the supply chain resilience, which improve firms’ supply chain risk management performance. Since hierarchy slows a company’s decision-making speed, it could negatively affect its supply chain performance.

Second, hierarchy also negatively affects supply chain related organizational learning (Hao et al., 2012; Hörbe et al., 2021). As demonstrated by Hörbe et al. (2021), decentralized organizations offer better learning opportunities for employees than the ones with strong hierarchy. Consequently, they are more likely to perform better in terms of innovation and development of products. Similarly, Lundberg and Brownell (1993) suggested organizations with organic structure have more potential in organizational learning than organizations with overly centralized or formalized structures.

Arguably, it is important for firms to learn lessons from their supply chain experiences. As suggested by Cai and Yang (2014), business partners represent an important source of skill and knowledge for firms, including skills related to supply chain management. Therefore, learning from trading partners allows firms to improve their supply chain performance. In this sense, by hindering organizational learning, hierarchy negatively affects supply chain performance.

Based on the argument, the following hypothesis is proposed:

_Hypothesis 7: Hierarchy negatively affects supply chain performance._
Chapter 4 Methodology

In this chapter, I will first present the strategy for sampling, data validation, and data collection. Next, I will discuss my analysis strategy.

4.1 Questionnaire items

The questionnaire was developed based on a comprehensive literature review. The survey was initially designed in English. Since the research is conducted in China, a back-translation approach was adopted. Two researchers fluent in English and Chinese translated and back-translated all measures to ensure theoretical comparability (Hoskisson et al., 2000).

There are five constructs in the theoretical model. According to Hair et al. (2018, p. 633), a model with five or fewer constructs need to have a minimum of three items for each construct. The questionnaire items for each factor were adopted from prior studies, which are all measured by using 5-scale Likert scales. The sources of the questionnaire items are presented in Appendix 1. Respondents were asked to answer several questions related to their and their companies’ demographic information. The initial questionnaire was first reviewed by two experts in supply chain management. Revision was made based on their recommendations. Next, a pilot test was conducted by administering the questionnaire to scholars and procurement practitioners. Further revision was made based on their feedback.

To ensure the quality of collected data, quality control questions were included in the questionnaire. Responses from participants who provide opposite answers to similar
questions, for example, those report high on-time delivery in question No.4. but low on-
time delivery in question No.39, will be regarded as invalid. In addition, since the survey
was conducted online, I’m able to set a timer for respondents. For each question,
respondents were required to spend at least 30 seconds to respond. Furthermore, the
maximum answering time for the survey is set at 1000 seconds for 40 questions, with an
assumption that they are distracted if they spend more than 1000 seconds. Any response
that did not meet the time requirements was also regarded as a invalidate one.

The questionnaire items measuring the five constructs of questions were presented
on different webpages. On each page, respondents will only see items related to one
construct. In order to increase respondents’ patience, a progress bar was displayed to show them the number of questions remaining.

The data was collected from two sources. First, an invitation was sent to my
friends and family members, who were working in the manufacturing and technology
industries and doing procurement jobs. 77 responses were collected. Second, an online
survey company, wen juan xing, was recruited to conduct the survey. The company first scanned its database of around 6.2 million individuals. It identified around 6646
individuals who are likely to be purchasing professionals based on their demographic
information. On October 2022, email invitations were sent to the selected potential
respondents. It first asked the respondents to answer a set of prerequisite questions, which
were designed to confirm that their jobs are related to procurement, and they interact with their suppliers. After the screening, 507 volunteers responded to the online survey in two
weeks. After removing responses that are deemed invalidate according to the criteria
mentioned above, 206 out of the 507 responses were kept for further analysis, with a
response rate of 3.1 percent. Combining the data collected from the two sources, I am able to obtain 283 valid responses.

The survey questionnaire is presented in the Appendix 1.

4.2 Control Variables

The first section of the survey collects demographic information of respondents and their firms, which were used as the control variable in data analysis. They are: respondents’ tenure, the number of employees in the buyer company, and the number of employees in the supplier company.

4.2.1 Tenure

Arguably, employees’ communication style may change as their job tenure increases. First, they may learn from their job experience and improve their communication skills. The longer an employee has worked for a company, the better he or she understands the management and organizational culture; The more familiar an employee is with the company’s management and culture, the better he/she could communicate with actors within and outside the company.

Second, with a longer tenure, a boundary spanner could have enough time to establish a close relationship with trading partners, especially his/her counterparts. It is suggested that close relationship between trading partners will facilitate their firms’ relationship and transitions (Dong et al., 2017). Since the current study investigates the
communication between boundary spanners and its influence on supply chain performance, the boundary spanner’s tenure should be included as a control variable.

### 4.2.2 Number of employees

Arguably, in a large company, more people may involve in intra-organizational communication than in a small company. However, the more people involved in the message transfer, the more likely that information loss or bias may occur (Liu et al., 2010; Sussman, 1975). Therefore, the number of employees in the buyer company may affect its internal communication, such as organizational listening and supervisor listening, which subsequently affect the quality of intraorganizational communication.

Furthermore, the number of employees reflects a company’s size. The buyer and the supplier’s company size could greatly affect their power in the relationship, as well as their interaction and supply chain performance. For example, Schermerhorn (1977) showed that organizational size and type are positively related to the information sharing in inter-organizational activities. Similarly, Goh and Eldridge (2019) reported that company size is negatively related to supply chain performance, such as sales and operating planning procedure.

### 4.3 Reliability Test

According to Schumacker and Lomax (2010, p.182), reliability denotes different types of measurement errors associated with observed variable scores. Reliability focuses on the capability of an assessment to be consistent, generally referred to as internal consistency, consistency over time, and consistency when using similar measurements. In
other words, reliability refers to the extent to which a set of latent construct indicators are consistent in their assessment (Hair et al., 1998, p. 583).

Cronbach (1951) argue that any measurement-based research must concerned with the reliability of scales. A reliability coefficient indicates whether a researcher anticipated correctly that a specific set of items would yield interpretable declarations about personal characteristics. In this study, Cronbach’s alpha was chosen to test the reliability of the scales. It is the most widely used reliability test (Pedhazur & Schmelkin, 1991, p. 93).

4.4 Confirmatory Factor Analysis

4.4.1 Definition

Constructs, also known as concepts, are theoretical propositions and abstractions that aim to organize and make sense of our surroundings (Pedhazur & Schmelkin, 1991, p. 52). The validity of assumptions about unobserved variables based on observed variables is addressed by construct validation. According to Hair et al. (1998, p. 584), validity refers to the capability of a construct’s indicators to measure the knowledge under the research accurately. They further argue that validity and reliability are independent but interrelated concepts. Reliability does not ensure the validity, and vice versa. Similarly, Pedhazur and Schmelkin (1991, p. 224) suggest that construct validity identifies the correspondence between an assessment and the construct that is being
measured or operated. Before conducting data analysis, the validity of the data should be tested (Lloyd et al., 2015).

I test the validity of the constructs by running confirmatory factor analysis. Factor analysis can determine whether the information can be edited down or summarised in a smaller set of components (Hair et al., 1998, p. 88). It assists researchers in selecting constructs that are to be reserved, rejected, or revised (Hair et al., 1998, p.95; Pedhazur & Schmelkin, 1991, p. 68; Schumacker & Lomax, 2010, p. 164). Researchers often use confirmatory factor analysis (CFA) to test the statistical significance of a hypothesized factor model (Schumacker & Lomax, 2010). Specifically, CFA is used to validate the multi-item scales’ ability to capture their respective constructs (Cai et al., 2010; Cai et al., 2017; Yang et al., 2021). For current study, I conducted CFA by using Jamovi 2.3.18.

### 4.5 Path Analysis

To test the hypotheses in the research model, I run a path analysis by using SPSS AMOS 27 (Qin & Men, 2021). According to Hair et al. (1998, p. 582), path analysis is a technique for estimating relationships in a framework of structural equations that uses simple bivariate correlations. This technique relies on clarifying the relationships in a sequence of regression-like equations (represented graphically in a path diagram), which can then be predicted by calculating the amount of correlation contributing to each impact in each equation simultaneously. Depending on the variable relationships included in the path model, one or multiple regression analyses are conducted in path analysis (Schumacker & Lomax, 2010, p. 148).
For current study, all items in the path analysis model were represented by the mean score of their respective indicators.
Chapter 5  Analysis and findings

This chapter first presents the demographic information of the survey respondents. Next, the results of data validation are presented. Finally, it will present the data analysis results and findings.

5.1 Participants’ demographic information

Age

No respondents are under 20 years old or above 60. Most respondents (54%) are aged between 20 to 30; 32 percent of respondents are aged between 31 to 40; 6% of them are between 41 to 50; and 8% of them are between 51 to 60. The following table (Table 1) and pie chart (Figure 2) provide the detail and percentage of the age information.

<table>
<thead>
<tr>
<th>Age</th>
<th>Respondent count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>20-30</td>
<td>154</td>
<td>54%</td>
</tr>
<tr>
<td>31-40</td>
<td>90</td>
<td>32%</td>
</tr>
<tr>
<td>41-50</td>
<td>18</td>
<td>6%</td>
</tr>
<tr>
<td>51-60</td>
<td>21</td>
<td>8%</td>
</tr>
<tr>
<td>&gt;60</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>283</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1. Respondent age distribution
Tenure

Most of the respondents (31.45%) are junior employees in their organizations, with tenure between 1 to 3 years; 24.38 percent of respondents have been working for their companies for 4-5 years; 26.5 percent of them have a tenure between 6-10 years; and 17.67 percent of the respondents have been working in their companies for more than 10 years. The following table (Table 2) and pie chart (Figure 3) provide the details of the tenure.
<table>
<thead>
<tr>
<th>Tenure (in years)</th>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>89</td>
<td>31.45%</td>
</tr>
<tr>
<td>4-5</td>
<td>69</td>
<td>24.38%</td>
</tr>
<tr>
<td>6-10</td>
<td>75</td>
<td>26.5%</td>
</tr>
<tr>
<td>&gt;10</td>
<td>50</td>
<td>17.67%</td>
</tr>
<tr>
<td>Total</td>
<td>283</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Table 2. Respondents tenure distribution*

*Figure 3. Respondent tenures*
Gender

58 percent of respondents were females, while 41 percent of them were males.

The detail of the respondents’ gender is showed below in table (Table 3) and pie chart (Figure 4):

<table>
<thead>
<tr>
<th>Gender</th>
<th>Respondents Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>164</td>
<td>58%</td>
</tr>
<tr>
<td>Male</td>
<td>117</td>
<td>41%</td>
</tr>
<tr>
<td>Not willing to tell</td>
<td>2</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table 3 Participant gender distribution
Buyer company’s size

About the respondents (boundary spanner of buyer companies)’ firms, 5% have less than 25 employees; 25% have 25 to 100 employees; 33% of them have 101-300 employees; 21% have 301-1000 workers; 12 % have 1001-5000 employees; and the 4% have more than 5000 employees.

The details of the buyer company size are presented in the following table (Table 4) and chart (Figure 5)
<table>
<thead>
<tr>
<th>Employee number</th>
<th>Respondent Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;25</td>
<td>14</td>
<td>5%</td>
</tr>
<tr>
<td>25-100</td>
<td>69</td>
<td>25%</td>
</tr>
<tr>
<td>101-300</td>
<td>94</td>
<td>33%</td>
</tr>
<tr>
<td>301-1000</td>
<td>60</td>
<td>21%</td>
</tr>
<tr>
<td>1001-5000</td>
<td>35</td>
<td>12%</td>
</tr>
<tr>
<td>&gt;5000</td>
<td>11</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>283</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Table 4 Employee number in buyer company*

*Figure 5 Employee number in buyer company*
Supplier company size

In the supplier companies (respondents’ suppliers), 5% have less than 25 employees; about 25% have 25 to 100 employees; 33% have 101 to 300 employees; 21% have 301 to 1000 employees; 12% have 1001 to 5000 employees; and 4% have more than 5000 workers.

The details of the supplier company size are presented in the following table (Table 5) and chart (Figure 6)

<table>
<thead>
<tr>
<th>Employee number</th>
<th>Respondent Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;25</td>
<td>21</td>
<td>5%</td>
</tr>
<tr>
<td>25-100</td>
<td>89</td>
<td>25%</td>
</tr>
<tr>
<td>101-300</td>
<td>100</td>
<td>33%</td>
</tr>
<tr>
<td>301-1000</td>
<td>49</td>
<td>21%</td>
</tr>
<tr>
<td>1001-5000</td>
<td>15</td>
<td>12%</td>
</tr>
<tr>
<td>&gt;5000</td>
<td>9</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>283</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 5 Employee number in supplier company
5.2 Data screening

5.2.1 Reliability Analysis

Before testing the path model, the reliability of the data was tested by SPSS 28.0. As suggested by Nunnally and Bernstein (1994), the threshold of Cronbach’s alpha is set at 0.7 for the reliability test.

Among all the constructs in the research model, supply chain performance is measured by formative scale, and thus is excluded from the reliability test. The formative scale items are regarded as a generator or cause indicators in the experiment, i.e., the

Figure 6 Employee number in supplier company
cause of the construct in question (Pedhazur & Schmelkin, 1991, p. 54). De Giovanni and Esposito Vinzi (2012) argued that performance should be regarded as a formative construct. They proposed that operational performance cannot be measured by reflective scale because each item represents a specific organizational component of performance, and only their combined mixture “forms” the construct. Similarly, Petter et al. (2007) suggest that the construct of organizational performance, measured by indicators such as productivity, profitability, and market share, is an example of a formative construct. Malakouti et al. (2017) also identify agile supply chain management as a formative construct. In the same vein, I argued that supply chain performance should be regarded as a formative construct and excluded from reliability and CFA test.

Overall, the Cronbach alpha of the constructs are presented in the table (Table 6). The reliability of the construct “hierarchy” is below the cut-off value of 0.7. As I will discuss later, two items measuring this item will be dropped based on the reliability test results and CFA result.
<table>
<thead>
<tr>
<th>Composite construct</th>
<th>Construct</th>
<th>Cronbach alpha</th>
<th>Number of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Hierarchy</td>
<td>0.466</td>
<td>5</td>
</tr>
<tr>
<td>Listening</td>
<td>Organizational listening</td>
<td>0.866</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Supervisor listening</td>
<td>0.841</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>External communication quality</td>
<td>0.733</td>
<td>5</td>
</tr>
</tbody>
</table>

*Table 6 Reliability of Constructs: Cronbach Alpha Values (with all variables)*

Additionally, to test the appropriateness of the formative construct, *supply chain performance*, I conducted a collinearity test by using SPSS 28. As shown in Table 7, all Variance Inflation Factors (VIF) are under 2.5, which is below the cut-off point of 10 (Neter et al., 1990) and indicate that collinearity is not a serious concern. In other words, the construct of supply chain performance is not collineated with other items in the theoretical model.
<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.189</td>
<td>.222</td>
<td></td>
</tr>
<tr>
<td>Hierarchy</td>
<td>-.015</td>
<td>.026</td>
<td>-.028</td>
</tr>
<tr>
<td>External</td>
<td>.524</td>
<td>.043</td>
<td>.572</td>
</tr>
<tr>
<td>communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational</td>
<td>.183</td>
<td>.050</td>
<td>.224</td>
</tr>
<tr>
<td>listening</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor</td>
<td>.018</td>
<td>.048</td>
<td>.023</td>
</tr>
<tr>
<td>listening</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 7 Collinearity Test*
The Table 8 presents the correlation between constructs, and the mean and standard deviation of each construct.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Hierarchy</th>
<th>OL</th>
<th>SL</th>
<th>ECQ</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.667</td>
<td>0.931</td>
</tr>
<tr>
<td>OL</td>
<td>Pearson Correlation</td>
<td>-.445**</td>
<td></td>
<td></td>
<td>2.699</td>
<td>0.931</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>&lt;.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SL</td>
<td>Pearson Correlation</td>
<td>-.384**</td>
<td>.703**</td>
<td></td>
<td>3.899</td>
<td>0.618</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECQ</td>
<td>Pearson Correlation</td>
<td>-.184**</td>
<td>.395**</td>
<td>.459**</td>
<td>4.028</td>
<td>0.551</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.002</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCP</td>
<td>Pearson Correlation</td>
<td>-.242**</td>
<td>.479**</td>
<td>.454**</td>
<td>.677**</td>
<td>4.039</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td></td>
</tr>
</tbody>
</table>

*Table 8 Descriptive Data*

Note: A: Hierarchy; OL: organizational listening; SL: supervisor listening; ECQ: boundary spanner’s external communication quality; SCP: supply chain performance

### 5.2.2 Validity Analysis

I conducted confirmatory factory analysis to test the validity of the constructs by using Jamovi software package. According to Hair et al. (1998, p. 88), the CFA factor loading cut-off points for sample size between 250-350 is 0.7.
The Table 9 presents factoring loading for each item in the questionnaire. Based on the results of reliability test (Table 6) and confirmatory factor analysis (Table 9), I removed items with low factor loading (i.e., standardized factor loading below 0.5), such as A1 and A5 (people respect superior's opinion/viewpoint, and employees are lack of status, respectively). Then I rerun reliability test and CFA. The analysis results are presented in Table 10 and Table 11.

**Confirmatory Factor Analysis**

<table>
<thead>
<tr>
<th>Factor Loadings</th>
<th>Factor</th>
<th>Indicator</th>
<th>Estimate</th>
<th>SE</th>
<th>Z</th>
<th>p</th>
<th>Stand. Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>A1</td>
<td>0.0900</td>
<td>0.0370</td>
<td>2.43</td>
<td>0.015</td>
<td>0.157</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A2</td>
<td>-0.7984</td>
<td>0.0562</td>
<td>-14.20</td>
<td>&lt;.001</td>
<td>-0.784</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A3</td>
<td>-1.0137</td>
<td>0.0634</td>
<td>-16.00</td>
<td>&lt;.001</td>
<td>-0.865</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A4</td>
<td>-0.6842</td>
<td>0.0641</td>
<td>-10.68</td>
<td>&lt;.001</td>
<td>-0.618</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A5</td>
<td>0.1942</td>
<td>0.0728</td>
<td>2.67</td>
<td>0.008</td>
<td>0.172</td>
<td></td>
</tr>
<tr>
<td>Organizational Listening</td>
<td>OL1</td>
<td>0.5450</td>
<td>0.0429</td>
<td>12.69</td>
<td>&lt;.001</td>
<td>0.592</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OL2</td>
<td>0.6269</td>
<td>0.0460</td>
<td>13.62</td>
<td>&lt;.001</td>
<td>0.728</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OL3</td>
<td>0.5500</td>
<td>0.0434</td>
<td>12.66</td>
<td>&lt;.001</td>
<td>0.690</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OL4</td>
<td>0.6057</td>
<td>0.0459</td>
<td>13.19</td>
<td>&lt;.001</td>
<td>0.712</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OL5</td>
<td>0.5693</td>
<td>0.0449</td>
<td>12.69</td>
<td>&lt;.001</td>
<td>0.691</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OL6</td>
<td>0.6106</td>
<td>0.0453</td>
<td>13.49</td>
<td>&lt;.001</td>
<td>0.723</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OL7</td>
<td>0.5154</td>
<td>0.0472</td>
<td>10.91</td>
<td>&lt;.001</td>
<td>0.615</td>
<td></td>
</tr>
<tr>
<td>Supervisor Listening</td>
<td>SL1</td>
<td>0.5222</td>
<td>0.0412</td>
<td>12.67</td>
<td>&lt;.001</td>
<td>0.694</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL2</td>
<td>0.6126</td>
<td>0.0547</td>
<td>11.20</td>
<td>&lt;.001</td>
<td>0.633</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL3</td>
<td>0.6889</td>
<td>0.0555</td>
<td>12.42</td>
<td>&lt;.001</td>
<td>0.685</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL4</td>
<td>0.5950</td>
<td>0.0481</td>
<td>12.38</td>
<td>&lt;.001</td>
<td>0.682</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL5</td>
<td>0.5844</td>
<td>0.0510</td>
<td>11.46</td>
<td>&lt;.001</td>
<td>0.646</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL6</td>
<td>0.5131</td>
<td>0.0491</td>
<td>10.45</td>
<td>&lt;.001</td>
<td>0.598</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL7</td>
<td>0.6124</td>
<td>0.0402</td>
<td>12.45</td>
<td>&lt;.001</td>
<td>0.686</td>
<td></td>
</tr>
<tr>
<td>Boundary Spanner’s External Communication Quality</td>
<td>ECQ1</td>
<td>0.4409</td>
<td>0.0404</td>
<td>10.90</td>
<td>&lt;.001</td>
<td>0.651</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECQ2</td>
<td>0.4966</td>
<td>0.0461</td>
<td>10.78</td>
<td>&lt;.001</td>
<td>0.646</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECQ3</td>
<td>0.4455</td>
<td>0.0460</td>
<td>9.68</td>
<td>&lt;.001</td>
<td>0.592</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECQ4</td>
<td>0.4800</td>
<td>0.0506</td>
<td>9.48</td>
<td>&lt;.001</td>
<td>0.576</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ECQ5</td>
<td>0.5670</td>
<td>0.0438</td>
<td>12.96</td>
<td>&lt;.001</td>
<td>0.746</td>
<td></td>
</tr>
</tbody>
</table>

*Table 9 Confirmatory Factor Analysis with All Variables*

To test the convergent validity, the average variance extracted (AVE) is calculated. Traditionally, the recommended cut-off value for AVE is 0.5. As shown in Table 10, the AVE of boundary spanner’s external communication quality and supervisor
listening are slightly below 0.5. However, it is argued that AVE above 0.4 is acceptable if Cronbach’s alpha is above 0.7 (Aibinu et al., 2011; Hair et al., 2016). Since the two constructs’ Cronbach’s alpha both exceed 0.7, their convergent validity is deemed acceptable. On the other hand, discriminant validity of the constructs is supported as AVE of each construct was higher than the shared variance between all constructs (Fornell & Larcker, 1981).

<table>
<thead>
<tr>
<th>Composite construct</th>
<th>Construct</th>
<th>Cronbach alpha</th>
<th>Number of indicators</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Hierarchy</td>
<td>0.798</td>
<td>3 (No A1/5)</td>
<td>0.635</td>
</tr>
<tr>
<td>Listening</td>
<td>Organizational listening</td>
<td>0.866</td>
<td>7</td>
<td>0.533</td>
</tr>
<tr>
<td></td>
<td>Supervisor listening</td>
<td>0.841</td>
<td>7</td>
<td>0.497</td>
</tr>
<tr>
<td>Communication quality</td>
<td>External communication quality</td>
<td>0.733</td>
<td>5</td>
<td>0.474</td>
</tr>
</tbody>
</table>

Table 10 Reliability of Constructs: Cronbach Alpha Values
### Confirmatory Factor Analysis

#### Factor Loadings

<table>
<thead>
<tr>
<th>Factor</th>
<th>Indicator</th>
<th>Estimate</th>
<th>SE</th>
<th>Z</th>
<th>p</th>
<th>Stand. Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>A2</td>
<td>0.801</td>
<td>0.0569</td>
<td>14.09</td>
<td>&lt;.001</td>
<td>0.787</td>
</tr>
<tr>
<td></td>
<td>A3</td>
<td>1.017</td>
<td>0.0641</td>
<td>15.88</td>
<td>&lt;.001</td>
<td>0.866</td>
</tr>
<tr>
<td></td>
<td>A4</td>
<td>0.686</td>
<td>0.0641</td>
<td>10.70</td>
<td>&lt;.001</td>
<td>0.620</td>
</tr>
<tr>
<td>Organizational Listening</td>
<td>DL1</td>
<td>0.545</td>
<td>0.0429</td>
<td>12.69</td>
<td>&lt;.001</td>
<td>0.682</td>
</tr>
<tr>
<td></td>
<td>DL2</td>
<td>0.627</td>
<td>0.0460</td>
<td>13.63</td>
<td>&lt;.001</td>
<td>0.728</td>
</tr>
<tr>
<td></td>
<td>DL3</td>
<td>0.550</td>
<td>0.0434</td>
<td>12.66</td>
<td>&lt;.001</td>
<td>0.690</td>
</tr>
<tr>
<td></td>
<td>DL4</td>
<td>0.606</td>
<td>0.0459</td>
<td>13.18</td>
<td>&lt;.001</td>
<td>0.712</td>
</tr>
<tr>
<td></td>
<td>DL5</td>
<td>0.569</td>
<td>0.0449</td>
<td>12.68</td>
<td>&lt;.001</td>
<td>0.691</td>
</tr>
<tr>
<td></td>
<td>DL6</td>
<td>0.611</td>
<td>0.0453</td>
<td>13.49</td>
<td>&lt;.001</td>
<td>0.723</td>
</tr>
<tr>
<td></td>
<td>DL7</td>
<td>0.515</td>
<td>0.0472</td>
<td>10.91</td>
<td>&lt;.001</td>
<td>0.614</td>
</tr>
<tr>
<td>Supervisor Listening</td>
<td>SL1</td>
<td>0.622</td>
<td>0.0412</td>
<td>12.67</td>
<td>&lt;.001</td>
<td>0.694</td>
</tr>
<tr>
<td></td>
<td>SL2</td>
<td>0.612</td>
<td>0.0547</td>
<td>11.19</td>
<td>&lt;.001</td>
<td>0.632</td>
</tr>
<tr>
<td></td>
<td>SL3</td>
<td>0.689</td>
<td>0.0555</td>
<td>12.42</td>
<td>&lt;.001</td>
<td>0.685</td>
</tr>
<tr>
<td></td>
<td>SL4</td>
<td>0.595</td>
<td>0.0481</td>
<td>12.37</td>
<td>&lt;.001</td>
<td>0.682</td>
</tr>
<tr>
<td></td>
<td>SL5</td>
<td>0.585</td>
<td>0.0510</td>
<td>11.47</td>
<td>&lt;.001</td>
<td>0.646</td>
</tr>
<tr>
<td></td>
<td>SL6</td>
<td>0.513</td>
<td>0.0491</td>
<td>10.45</td>
<td>&lt;.001</td>
<td>0.598</td>
</tr>
<tr>
<td></td>
<td>SL7</td>
<td>0.612</td>
<td>0.0492</td>
<td>12.45</td>
<td>&lt;.001</td>
<td>0.666</td>
</tr>
<tr>
<td>Boundary Spanner’s External Communication Quality</td>
<td>ECQ1</td>
<td>0.441</td>
<td>0.0404</td>
<td>10.91</td>
<td>&lt;.001</td>
<td>0.651</td>
</tr>
<tr>
<td></td>
<td>ECQ2</td>
<td>0.496</td>
<td>0.0461</td>
<td>10.78</td>
<td>&lt;.001</td>
<td>0.646</td>
</tr>
<tr>
<td></td>
<td>ECQ3</td>
<td>0.440</td>
<td>0.0460</td>
<td>9.69</td>
<td>&lt;.001</td>
<td>0.582</td>
</tr>
<tr>
<td></td>
<td>ECQ4</td>
<td>0.480</td>
<td>0.0506</td>
<td>9.49</td>
<td>&lt;.001</td>
<td>0.576</td>
</tr>
<tr>
<td></td>
<td>ECQ5</td>
<td>0.567</td>
<td>0.0438</td>
<td>12.95</td>
<td>&lt;.001</td>
<td>0.745</td>
</tr>
</tbody>
</table>

Table 11 Confirmatory Factor Analysis Results

Overall, the reliability and validity scores of the scales all passed suggested cut-off value.

#### 5.2.3 Normality test and kurtosis

As suggested by Schumacker and Lomax (2010, p. 28), statistical techniques such as path analysis are frequently based on the assumption that data is typically normal
distributed. In this article, I used skewness and kurtosis tests to examine the normality of
the data. As shown in Table 12, the absolute values of skewness scores are all under 1.4,
and the Kurtosis scores are all below 3.9. Hair et al. (1998) suggested that the cut-off
points for skewness and Kurtosis are less than two and seven, respectively. Therefore,
skewness and kurtosis are not serious concern for the current study.

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Variance</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Statistic</td>
<td>Std. Error</td>
<td>Statistic</td>
<td>Statistic</td>
<td>Std. Error</td>
</tr>
<tr>
<td>A</td>
<td>283</td>
<td>2.669</td>
<td>.055</td>
<td>.931</td>
<td>.866</td>
</tr>
<tr>
<td>OL</td>
<td>283</td>
<td>3.899</td>
<td>.037</td>
<td>.618</td>
<td>.382</td>
</tr>
<tr>
<td>SL</td>
<td>283</td>
<td>3.625</td>
<td>.038</td>
<td>.643</td>
<td>.413</td>
</tr>
<tr>
<td>ECQ</td>
<td>283</td>
<td>4.028</td>
<td>.033</td>
<td>.551</td>
<td>.304</td>
</tr>
<tr>
<td>SCP</td>
<td>283</td>
<td>4.039</td>
<td>.030</td>
<td>.505</td>
<td>.255</td>
</tr>
<tr>
<td>Valid N</td>
<td>283</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 12 Normality test*

Note: A: Hierarchy; OL: organizational listening; SL: supervisor listening; ECQ: boundary spanner’s external communication quality; SCP: supply chain performance

5.3 Analysis results

I analyze the path model by using SPSS AMOS 28. The fit indices of the analysis
results are presented in Table 13. The Table 11 also presents the cut-off values for the
indices suggested by Hair et al. (1998, p.657) and Schumacker & Lomax (2010, p. 87).
As shown in the Table 11, the overall model fit of the path model ($\chi^2$/df = 4.04; RMR = 0.035; GFI = 0.969; 0.948; CFI = 0.960) are satisfactory.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Result</th>
<th>Suggested cut-off point</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$</td>
<td>36.377 (with df = 9); $\chi^2$/df = 4.04</td>
<td>$\chi^2$/df &lt;5</td>
</tr>
<tr>
<td>RMR</td>
<td>0.035</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>GFI</td>
<td>0.969</td>
<td>&gt; 0.9</td>
</tr>
<tr>
<td>NFI</td>
<td>0.948</td>
<td>&gt; 0.9</td>
</tr>
<tr>
<td>CFI</td>
<td>0.96</td>
<td>&gt; 0.95</td>
</tr>
</tbody>
</table>

Table 13 Model fit summary

Furthermore, the coefficient of individual paths and their significance are presented in Table 14.

5.3.1 Path coefficient

The threshold of significant path is set at $p<0.1$. The path analysis results support all hypotheses.

First, hierarchy negatively influences organizational listening (H1), with significant level of $p < 0.001$ and a standardized path coefficient of -0.446. Next, Hypothesis 2, which predicts that hierarchy negatively influences supervisor listening, is supported, with path coefficient of -0.082 at $p = 0.08$. Hypothesis 3, which predicts that organizational listening is positively related to boundary spanner’s communication
quality, is supported with path coefficient of 0.14 at \( p = 0.053 \). The hypothesis 4 predicts that supervisor listening positively influences the boundary spanner’s communication quality. It is supported by a coefficient of 0.383 at \( p < 0.001 \). Hypothesis 5 predicts that the higher the external communication quality, the higher the supply chain performance. This is supported by a path coefficient of 0.646 (\( p < 0.001 \)). The hypothesis 6 predicts that organizational listening is positively related to supervisor listening. It is supported by a path correlation coefficient of 0.654 at \( p < 0.001 \). Finally, the hypothesis 7 predicts that hierarchy is negatively related to supply chain performance. It is supported by a path coefficient of -0.131 at \( p < 0.01 \).
<table>
<thead>
<tr>
<th>Path</th>
<th>Significance</th>
<th>Coefficient</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy $\rightarrow$ Organizational Listening (H1)</td>
<td>p &lt; 0.001</td>
<td>-0.446</td>
<td>Support</td>
</tr>
<tr>
<td>Hierarchy $\rightarrow$ Supervisor Listening (H2)</td>
<td>p = 0.08</td>
<td>-0.082</td>
<td>Support</td>
</tr>
<tr>
<td>Organizational Listening $\rightarrow$ External Communication Quality (H3)</td>
<td>p = 0.053</td>
<td>0.140</td>
<td>Support</td>
</tr>
<tr>
<td>Supervisor Listening $\rightarrow$ External Communication Quality (H4)</td>
<td>p &lt; 0.001</td>
<td>0.383</td>
<td>Support</td>
</tr>
<tr>
<td>External Communication Quality $\rightarrow$ Supply Chain Performance (H5)</td>
<td>p &lt; 0.001</td>
<td>0.646</td>
<td>Support</td>
</tr>
<tr>
<td>Organizational Listening $\rightarrow$ Supervisor Listening (H6)</td>
<td>p &lt; 0.001</td>
<td>0.654</td>
<td>Support</td>
</tr>
<tr>
<td>Hierarchy $\rightarrow$ Supply Chain Performance (H7)</td>
<td>p &lt; 0.01</td>
<td>-0.131</td>
<td>Support</td>
</tr>
</tbody>
</table>

*Table 14 Path analysis*
Figure 7 Path analysis result

Note: *p<0.1, **p < 0.01, ***p < 0.001
Chapter 6  Discussion

This chapter first discuss the findings of the current study and their implications. It is followed by limitations and directions for future research.

6.1 Theoretical contribution

The current study aims to investigate the effect of hierarchy on supply chain performance. In this study, I proposed that the hierarchy could influence internal listening, including organizational and supervisor listening, which subsequently affect inter-firm communication conducted by boundary spanners, as well as supply chain performance. Additionally, hierarchy could directly affect supply chain performance. I have empirically tested my research model in the context of China.

The findings of the current study contribute to literature in several ways. First, prior studies have mostly focus on the effect of hierarchy on general intraorganizational communication. In this article, I focus on its influence on a specific type of intraorganizational communication, namely, internal listening. Prior studies on internal listening have identified various antecedents. It is suggested that internal listening is affected by organizational characteristics such as culture, policies, systems, communication technology and tools, listening skills, etc. (Capizzo & Feinman, 2022; Macnamara, 2016; Men et al., 2022). Additionally, managerial empathy is found as another critical element for effective internal listening (Qin & Men, 2021; Sahay, 2021). However, these studies generally ignore the role of organizational hierarchy. As shown by the current study, organizational hierarchy could greatly affect internal listening.
Therefore, the findings of the current study offer new perspective on how internal listening and employee performance are affected.

Second, by establishing linkage between internal listening and boundary spanners’ external communication, I identify a specific mechanism of how internal communication affect external communication. Prior studies on the linkage between internal and external communication mostly focus on the effect of internal communication quality. But communication quality could be affected by many factors. In this study, I highlight the importance of internal listening. As suggested by Lloyd et al. (2017), internal listening not only facility the comprehension and trust in supervisor-supervisee relationship, but also stimulate more communication between them. Similarly, Yang et al. (2021) maintained that internal listening help to establish communication channel between supervisors and employees. They argued that appropriate internal listening motivates employees to seek useful information to support the communication. In other words, internal listening is a key factor that could affect both communication quality and employee performance. Therefore, the finding of the current study provides a more nuanced understanding of how intraorganizational communication affects intraorganizational communication: internal listening will affect employee performance, as well as their ability to obtain information, and subsequently affect external communication.

Finally, I identify the direct linkage between hierarchy and supply chain performance. Prior studies mostly focus on the effect of hierarchy on internal performance. For example, it is found that hierarchy negatively affects the internal communication (Brandt, 2020; Renani et al., 2017), especially information processing and transmitting in
organizations (Erjavec et al., 2018; McBride, 2016). However, very few studies have investigated the effects of hierarchy on organizations’ interaction with trading partners, especially their supply chain performance. Therefore, the findings of the current study shed new insight into the effects of hierarchy on organizations performance.

6.2 Managerial implementation

The findings of current study offer several important implications for practitioners. First, managers shall make efforts to reduce the potential negative impact of hierarchy on the performance of their employees, including purchasing staffs. As suggested by Lee (2022), supervisors may utilize rich media such as face to face meeting and videoconference, rather than email and print media, to communicate with subordinates, thereby mitigating the negative influence of organizational hierarchy on the communication. Additionally, managers may organize employees into teams. They could provide teams with autonomy to make decisions. In this case, the teams do not need to frequently seek guidance from supervisors and managers, thereby reducing the negative impact of organizational hierarchy. Indeed, it is reported that team autonomy is positively related to company performance (von Bonsdorff et al., 2015). When it comes to purchasing, it is also reported that purchasing team’s autonomy could affect their performance (Driedonks et al., 2010).

Second, organizations need to recognize that organizational and the supervisor listening could greatly affect boundary spanner performance. Therefore, it is important for managers to make efforts to listen to boundary spanner. Organizations may promote favorable leader behaviors, which could facilitate organization and supervisor. Wang et
al. (2022) defined the favorable leader behavior as showing willingness to listen to employees and showing compliments or appreciation to employees. Especially, as suggested by Sahay (2021), it is important for leaders to show empathy when listening to employees. Such empathetic listening could make employees feel the sincerity from the organization and their feedback is valued by the organization. When it comes to purchasing, it is reported that leaders need to give purchasing staff individualized consideration and effectively communicate with them, thereby facilitating purchasing performance (Driedonks et al., 2010).

Finally, organizations should develop their performance appraisal system to encourage purchasing managers to listen to boundary spanners. Performance appraisal is a measurement of the human resources management to encourage appropriate behaviors and motivate employees (Kamphorst & Swank, 2018; Mashavira et al., 2022). Mashavira et al. (2022) suggested that organizations could include supportive communication and listening behavior in performance appraisal criteria to measure managers’ interpersonal competencies. More specifically, the performance appraisal system needs to collect feedbacks from employees regarding how frequently supervisors listen to their opinions, how sympathetic the supervisors are when they listening to subordinates, to what extent their opinions are accepted by the supervisors, etc. Based on the feedback, the system needs to reward supervisors for their appropriate listening behaviors. By doing so, the performance appraisal system could promote supervisor listening in the organization.
6.3 Limitation and Future Direction

There are several major limitations in my research, which also provides directions for future studies. First, I only collect data from the purchasing managers in the buyer company, rather than collecting dyadic data from both buyers and suppliers. Future researchers may collect dyadic data from both buyers and suppliers. As suggested by Cai et al. (2017), including a buyer-seller dyad could enable researchers to examine the finding's truthfulness in different settings. Pairing buyers with their suppliers allows researchers to better understand their inter-firm communication patterns, as well as the interaction of both parties' boundary spanners. Also, people can know how different organizational structures influence communication. Furthermore, researchers may obtain more accurate information regarding the dependent variables, such as supply chain performance and external communication quality, by collecting dyadic data.

Nevertheless, collecting dyadic data could be costly and time-consuming. When designing the research, researchers should make a trade-off between the research's precision and the research's cost. For the current study, I decided to rely on the data collected from the buyer companies’ boundary spanners, due to the budget limit.

Second, due to the budget limit, this research used a simple random sampling method to collect data from only one Chinese city. Thus, the finding of the current study may reflect some unique culture of this region. Specifically, the participant's cultural background could influence the findings of this research. Especially, people from different cultures have different tolerance for power distance or hierarchy. For example, Chow et al. (1999) demonstrates that employees from a high-power distance environment tend to worry about negative results from challenging or questioning their supervisors.
Arguably, such concerns affect the extent to which they are willing to express themselves when organization or supervisor are listening to them. Notably, power distance could differ in different regions across a large country like China. Therefore, power distance in the region that I conduct this study may affect its findings. Therefore, it is recommended that future researchers collect data from multiple provinces in China, and/or multiple countries with different cultural backgrounds to further verify my findings.

Third, the study was conducted during the COVID-19 pandemic. This particular business environment may affect the relationship between buyers and suppliers, as well as their supply chain performance. In the early stage of COVID-19, the supply of medical supplies was devastatingly influenced by the pandemic. There was often shortage of supplies and delay in deliveries. The turbulent environment put great pressure on the boundary spanners to coordinate with each other. Furthermore, compared to their larger counterparts, small companies typically exhibit a relatively weaker capacity to withstand dynamism in their surroundings and external pressures. As such, a supplier's performance is likely to be influenced by factors not included in my research model, for example, a supplier’s transportation capabilities. It is recommended that future researchers test my research model after Covid 19 pandemic to further verify its validity. Also, scholars could test the research model in different industries where environmental dynamism varies (Cai et al, 2022). They may also test the research model by comparing companies of different sizes.

Finally, the current study discusses the effects of hierarchy mainly from the power distance perspective. Particularly, I focus on the function of power distance in the intraorganizational setting, which is reflected in the organizational hierarchy. Future
researchers could study the influence of power distance or hierarchy in the settings of interorganizational relationship. Especially, different members may have different levels of powers in a supply chain. Kaufmann et al. (2023) show that power situations influence buyer-supplier relationship, as well as their relational and economic negotiation results. Arguably, the interfirn linkages, from the members with strong power to those with weak power, may form a type of interfirn hierarchy. To what extent such interfirn power and interfirn hierarchy along the supply chain affect supply chain outcomes is an interesting research topic.
Chapter 7 Conclusion

I first briefly introduced the background of this study in Chapter 1. In Chapter 2, theoretical backgrounds related to boundary spanner, organizational communication, and social exchange theory are discussed. Research hypotheses are introduced in Chapters 3. The research methodology and the findings are introduced in Chapter 4 and 5. Specifically, path analysis was used to test the hypotheses in this study. Based on the result of the path model, the negative relationship between hierarchy and communication was proven. I also found that hierarchy adversely influences performance.

The discussion of the findings is presented in chapter 6. The result of the path analysis in this article suggests that organizational hierarchy negatively affect supply chain performance directly and indirectly. In practice, the finding of this study could serve as a reference for managers to establish communication channel in intra-organizational and inter-organizational settings.
Reference


Appendix 1 Survey Question (English version)

**Demographic information**

1. What's your position in your company's purchasing department?
   A. Senior managers
   B. Department managers
   C. Junior staff
   D. Others

2. How long have you been in the company?
   A. 1-3 years
   B. 4-5 years
   C. 6-10 years
   D. More than 10 years

3. What kind of information do you exchange with your trading partners? (Choose all answers fit)
   A. Inventory information
   B. Delivery information
   C. Market demand information
   D. Product related information
   E. Company strategies
   F. Other information

4. What is your age? (Mou & Xu, 2020)
   A. < 20 years
   B. 20-30 years old
   C. 31-40 years old
   D. 41-50 years old
   E. 51-60 years old
   F. > 60 years old

5. What is your gender? (Mou & Xu, 2020)
   A. Female
   B. Male
   C. I’m not willing to tell.

6. Which industry is your company in? (Mitra & Datta, 2014)
   A. Automobile
   B. Electrics
   C. Engineering
   D. Consumer goods
   E. Leather
   F. Textiles
G. Pharmaceuticals  
H. Cement/Iron and steel  
I. Others  

7. What is the annual revenue of your company? (In million dollar) (Mitra & Datta, 2014)  
   A. < 50  
   B. 50-100  
   C. 101-200  
   D. 201-300  
   E. > 300  

8. What is the number of employees in your company? (Kwak et al., 2018)  
   A. Less than 25  
   B. 25-100  
   C. 101-300  
   D. 301-1000  
   E. 1001-5000  
   F. More than 5000  

9. What is the number of employees in your supplier’s company? (Kwak et al., 2018) (Choose a supplier that you are most familiar with)  
   A. Less than 25  
   B. 25-100  
   C. 101-300  
   D. 301-1000  
   E. 1001-5000  
   F. More than 5000  

10. What is the annual revenue of your supplier’s company? (In million dollar) (Mitra & Datta, 2014)  
    A. < 50  
    B. 50-100  
    C. 101-200  
    D. 201-300  
    E. > 300  

**Hierarchy in Organization**  
Hierarchy and status (Chow et al., 1999)  

<table>
<thead>
<tr>
<th>In your organization:</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>People respect superior's opinion/viewpoint</td>
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</tr>
<tr>
<td>Speaking has no effectiveness because of junior status</td>
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</tr>
</tbody>
</table>
lower level would be taken lightly/considered unimportant

Employees are afraid of giving different ideas from superior

Employees are lack of status

Internal listening

1. Organizational listening (Qin & Men, 2021) (Table 2)

<table>
<thead>
<tr>
<th>I feel my organization . . .</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gives recognition to people like me with legitimate rights to speak and be treated with respect</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Acknowledges views and expressions of voice from people like me</td>
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<tr>
<td>Pays attention to people like me.</td>
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</tr>
<tr>
<td>Interprets meaning from what people like me say as fairly and receptively as possible</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Tries to achieve understanding of the views, perspectives, and feelings of people like me.</td>
<td></td>
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</tr>
<tr>
<td>Gives consideration to what people like me have to say</td>
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<tr>
<td>Responds in an appropriate way after consideration has been given.</td>
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</tbody>
</table>

2. Supervisory listening (Qin & Men, 2021) (Table 2)
Generally, when my supervisor listens to me, I feel my supervisor

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is interested in what I have to say</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Makes me comfortable so I can speak openly</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Makes it easy for me to open up</td>
<td></td>
<td></td>
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<tr>
<td>Understands my feelings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is interested in me personally</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accepts me for what I am</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cares about me</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boundary Spanner Communication Quality (Mohr & Spekman, 1994)

<table>
<thead>
<tr>
<th>To what extent do you feel that your communication with the other companies’ boundary spanner is</th>
<th>Extremely low</th>
<th>Low</th>
<th>Neutral</th>
<th>High</th>
<th>Extremely high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accurate</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Adequate</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Complete</td>
<td></td>
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<td></td>
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<tr>
<td>Credible</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Supply Chain Performance (Cai & Yang, 2008)

<table>
<thead>
<tr>
<th>Evaluating this supplier’s performance, based on the following criteria</th>
<th>Extremely low</th>
<th>Low</th>
<th>Neutral</th>
<th>High</th>
<th>Extremely high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product quality</td>
<td></td>
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<td></td>
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<tr>
<td>On-time delivery</td>
<td></td>
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</tr>
<tr>
<td>Meeting the target costs [the actual costs of the purchased items compared with the target (goal or standard) costs]</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sales, service, and/or technical support</td>
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</tr>
</tbody>
</table>
Appendix 2 Survey Question (Chinese version)

基本信息

1. 你在公司采购部门的职位
   1. 高级管理人员
   2. 部门经理
   3. 初级职员
   4. 其他
2. 你在当前公司的就职时间
   1. 1-3年
   2. 4-5年
   3. 6-10年
   4. 10年以上
3. 以下哪种信息你会和你的贸易伙伴分享？（请选择所有符合的答案）
   1. 库存信息
   2. 交货信息
   3. 市场需求信息
   4. 产品信息
   5. 公司策略
   6. 其他
4. 你的年龄
   1. < 20岁
   2. 20-30岁
   3. 31-40岁
   4. 41-50岁
5. 51-60岁
6. > 60 岁
5. 你的性别
1. 女
2. 男
3. 不愿意告知
6. 你公司所在行业
1. 汽车
2. 电子
3. 工程
4. 消费品
5. 皮革
6. 纺织
7. 制药
8. 水泥/钢铁
9. 其他
7. 你公司的年利润（百万/美金）
1. < 50
2. 50-100
3. 101-200
4. 201-300
5. > 300
8. 你所在公司的员工数量
1. < 25
2. 25-100
3. 101-300
4. 301-1000
5. 1001-5000
6. > 5000
9. 你的供应商公司员工数量（选择你最熟悉的供应商填写）
1. < 25
2. 25-100
3. 101-300
4. 301-1000
5. 1001-5000
6. > 5000
10. 你的供应商公司的年利润（百万/美金；选择你最熟悉的供应商填写）
1. < 50
企业的等级情况

<table>
<thead>
<tr>
<th>在你的企业中：</th>
<th>非常反对</th>
<th>反对</th>
<th>中立</th>
<th>同意</th>
<th>非常同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>人们尊重上级领导的意见/观点 初级职员的发言</td>
<td></td>
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<td></td>
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<tr>
<td>不被重视</td>
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<tr>
<td>较低职位的人会被轻视</td>
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<tr>
<td>或者认为不重要</td>
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<tr>
<td>员工害怕发表与上级不一致的意见</td>
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<td></td>
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<tr>
<td>员工没有身份/等级的区别</td>
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</tbody>
</table>

企业内部聆听
1. 企业的聆听

<table>
<thead>
<tr>
<th>我认为我所在的企业 像我一样的员工都有权发表意见并受到尊重。 重视像我一样的员工的观点和意见 重视像我这样的员工</th>
<th>非常反对</th>
<th>反对</th>
<th>中立</th>
<th>同意</th>
<th>非常同意</th>
</tr>
</thead>
</table>

尽可能公平地接受和理解像我这样的人所提出的意见。尝试去理解像我这样员工的观点和感受，愿意参考我这样员工提出的观点，恰当地回应我们提出的建议。

2. 领导的聆听

总的来说，当我领导聆听我的观点，我感觉我的领导对我的感兴有让我感到我可以畅所欲言，让我很容易说出心里话。理解我的感受，对我本人表现出兴趣。接受我的为人方式，关心我。
企业间沟通质量

<table>
<thead>
<tr>
<th>你认为和最熟悉供应商的员工的沟通是</th>
<th>非常低</th>
<th>低</th>
<th>中等</th>
<th>高</th>
<th>非常高</th>
</tr>
</thead>
<tbody>
<tr>
<td>准时性</td>
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<td>准确性</td>
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<td>合适性</td>
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<td>完整性</td>
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<tr>
<td>可靠性</td>
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</table>

供应链表现

<table>
<thead>
<tr>
<th>通过以下标准评估最熟悉供应商的行为表现</th>
<th>非常低</th>
<th>低</th>
<th>中等</th>
<th>高</th>
<th>非常高</th>
</tr>
</thead>
<tbody>
<tr>
<td>产品质量 按时交货率</td>
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</tr>
<tr>
<td>达到目标成本率（实际成本与目标成本对比）销售服务和/或技术支持程度</td>
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</tbody>
</table>