



THE IMPACTS OF SINGLE SOURCING AND SOLE SOURCING ON BUYER/
SUPPLIER RELATIONSHIPS AND PURCHASING PERFORMANCE

By
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A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

Master of Business Administration

Graduate School of Business
Assumption University
Bangkok Thailand

April 2004

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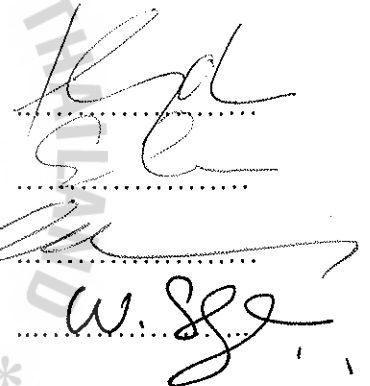
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Abstract

Purchasing strategy plays more and more important role in current business environment. Appropriate purchasing strategy directly influences purchasing organization's product quality and total costs, improves and establishes competitive advantage. A critical question is what kind of purchasing strategies are right to purchasing organizations and how the purchasing strategy impacts the purchasing performance and buyer/supplier relationship for the purchasing organizations.

The purpose of the study is to compare the impacts of two purchasing strategies: single sourcing and sole sourcing, on purchasing performance and buyer/supplier relationship. The purchasing performance is measured by product quality and total costs. Buyer/supplier cooperation and buyer dependence on the supplier are used to measure the buyer/supplier relationship. The study focuses on China's textile industry and only fabric manufacturers are investigated. The investigated region is limited to Ningbo area, which is one of major and advanced textile manufacturing region in China.

The primary data is collected through distributing the questionnaire to respondents by fax machines, or personal interview. The independent sample t-test is used to test hypotheses.

The results of hypotheses test show that there are significant different impacts of single sourcing and sole sourcing on product quality, buyer/supplier cooperation, and buyer dependence on the supplier. However, there is no significant different impact of single sourcing and sole sourcing on total costs.

Therefore, if there is only one available supplier for one specific part, the buyer has to employ sole sourcing. If the buyer wants to improve purchasing

performance and buyer/supplier relationship, the researcher suggests that the buyer seeks other potential suppliers who have potential abilities to produce that specific part. Thus, there is more than one supplier for that specific part, and the buyer can employ single sourcing to replace sole sourcing. Based on the outcomes of hypotheses test, single sourcing leads the buyer to receive higher product quality, strength buyer/supplier cooperation, and maintain lower level of buyer dependence on the supplier compared to sole sourcing.



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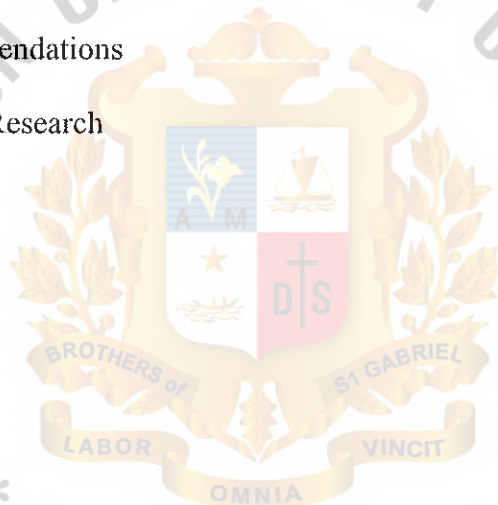
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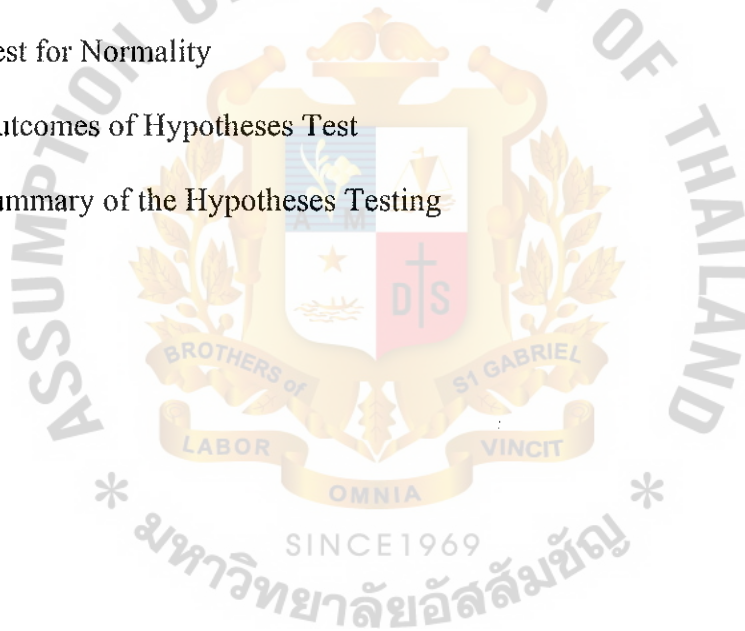
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Chapter 1 Introduction

1.1 Background of the Study

1.1.1 Background of the Study

Purchasing strategy plays more and more important role in current business environment. For example, Semesei Corporation changed its purchasing strategy resulting total purchasing costs reducing twenty-five percent (Jim, 2001). York International Corporation saved more than \$ 90 million during 1999 through cooperation with its suppliers (Purchasing, 1999).

The traditional purchasing approach utilized a number of suppliers for the same commodity. The trend of purchasing approach has been transferring toward the use of single source (Gregory et al., 2000). Reducing the supply base by concentrating on purchasing volumes can reduce the size of purchasing operation and increase the bargaining power of buyer. Along with reducing purchasing price, indirect cost, such as inspection costs, transportation cost and so on, can be reduced as well. Companies develop long-term contracts with few suppliers that offer them to cooperate with their suppliers, who are available to involve in product development, design, innovation, and so on with their customers, and make the suppliers' products much more closely meet their requirements. The single sourcing, which multiple suppliers are available for one product or service and the buyer selects and is using only one supplier, leads to lower cost, better quality, and more buyer/supplier cooperation (Newman, 1989). Sole sourcing is also adopted by the purchasing organizations in practice. It is a similar purchasing

strategy to single sourcing, which only one supplier is available for one product or service and the buyer is using the supplier.

There are similar views to Newman (1989)'s opinion about the impact of single sourcing. Deming (1986) suggested that single sourcing resulted in high product quality at lower total costs and high level of buyer/supplier relationship. However, Porter (1980) indicated that single sourcing and sole sourcing led to high total costs and high level of buyer dependence on the supplier. Many management and scholars are uncertain about the impacts of the two purchasing strategies.

Sole sourcing also plays an important role in practice. The buyer strategically cooperates with the sole supplier and develops long-term relationship with the supplier. The supplier devotes significant resources toward helping the buyer achieve cost saving and productivity objectives (Purchasing, 1999). Evidence indicates that Japanese auto manufacturers have had much better relationships with sole suppliers that result in lower costs, higher quality, and greater innovativeness (Womack et al., 1990). Japanese auto manufacturers, such as Toyota and Nissan, entered into U.S. auto market with high quality and competitive price which obtained through developing long-term and integrated relationships with fewer suppliers, especially with a sole source. U.S. auto companies, even companies in other industries and other countries, have imitated the Japanese auto manufacturers' purchasing strategy (Richardson 1993).

However, single sourcing and sole sourcing also have some disadvantages. When the buyers directly work together with their suppliers and invite suppliers to involve in the process of product innovation and design, Newman (1989) suggested that single sourcing and sole sourcing might yield buyer dependent on the supplier. But some people disagree with the risk from single sourcing. They argue that the risk can be eliminated through

supplier certification program. The purchasing companies evaluate all aspects of the supplier performance. If the certification program is implemented perfectly, once the supplier can't meet the buyer specification, the purchasing companies can seek new appropriate supplier in advance before the previous supplier is replaced. Therefore, the risk can be avoided.

Some people argued that single sourcing or sole sourcing was not always the appropriate purchasing strategy (Leavy, 1994). Multiple sourcing, which more than one supplier are available and the buyer purchases the same product or service from more than one supplier, plays an important role in practice as well. It also results in high product quality, lower total costs, and greater buyer/supplier relationship, especially in short-time contract. When the suppliers' performances are similar and their products are satisfied to the buyer's requirement, purchasing price can be reduced during the suppliers competing to the orders. Meanwhile, the companies can require the suppliers to improve product quality and meet the buyer's specification. There is not or less switching cost occurred compared to single sourcing. Therefore, multiple sourcing also leads to improve purchasing performance for the buyers.

1.1.2 China's Textile Industry

Textile industry is a traditional pillar industry in China. Following the development of international trade, textile plays more and more important role in china's economy, as well as in the world textile trade. It has gained 15 percent share of total world textile exports and 20 percent share of total Chinese exports (China Quarterly Forecast Report, 2002).

However, the impact of economic globalization and trade liberalization, economic recession, and its own inefficient management made the Chinese textile industry suffer considerably. Losses were \$1.0036 billion in 1996, \$540 million in 1997, and \$ 227 million in 1998. That caused a lot of textile enterprises closed and lots of workers lost their jobs. Since the beginning of 1990s, China started to restructure the industry, replaced outdated machines, upgraded the technology, closed some enterprises that didn't have capability to gain profit, especially some state-owned enterprises, and took other reforms. The government encouraged the private textile enterprises to expand and improve. The private enterprises brought additional capital and competitions. The textile market is not longer dominated by state-owned enterprises. The textile industry is changed to a capital-intensive and profitable base. In 1999, the textile industry returned to profit, \$97 million (East Asian Executives Report, 1999).

Although Chinese textile industry made progress, many problems remain not to be solved, such as: upgrade technology, improve management, simplify its trading system, modify its fashions, and exploit resources efficiently. The textile products only focus on low- and medium- quality. European, U.S, and Japanese enterprises dominate the domestic market of textile products with high quality, as well as international market. The textile marketing of high quality resulting in higher profitability has already been attractive many domestic enterprises to compete in this market. They continuously improve management, upgrade technology, and utilize resources efficiently. Along with WTO entry, China textile industry is marching toward a brand new development way (East Asian Executives Report, 1999).

Fabric manufacturer is one kind of business organizations that transform yarn into fabric. It plays an important role in textile industry. High quality fabric and updated

design are the key successful factors to survive in this field. The yarn is used to manufacture fabric, and its quality essentially determines the quality of fabric. Therefore, adequate purchasing strategy of fabric manufacturers not only improves product quality, but also reduces total costs. But there are many existing theories, which present different views for the impact of different purchasing strategies. There are also many arguments about the impacts of single sourcing and sole sourcing. Many experts and scholars support single sourcing and sole sourcing; especially Just-In-Time philosophy is popularly used by the business organizations. Of course, many people disagree with them. Therefore, this study will focus on the purchasing strategy of fabric manufacturers to compare the impacts of single sourcing and sole sourcing on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier in China's textile industry.

1.2 Statement of the Problems

As mentioned previously, purchasing strategy plays an important role in a firm's performance. There are many purchasing strategies available to purchasing organizations and many arguments and issues about these strategies. Along with popularity of Japanese Just-In-Time philosophy in business organizations, single sourcing and sole sourcing are popularly concerned by industry manufacturers. But the problems are that the manufacturers do not clearly understand the two purchasing strategies, how the two purchasing strategies influence to their performances, what's the different impacts of the two strategies, and so on. Therefore, the research questions are as follows:

- 1.2.1 Whether or not there is a different impact of single sourcing and sole sourcing on product quality.
- 1.2.2 Whether or not there is a different impact of single sourcing and sole sourcing on total costs.
- 1.2.3 Whether or not there is a different impact of single sourcing and sole sourcing on buyer/supplier cooperation.
- 1.2.4 Whether or not there is a different impact of single sourcing and sole sourcing on buyer dependence on the supplier.

1.3 Objectives of the Study

The purpose of the study is to investigate and compare the impacts of single sourcing and sole sourcing on purchasing performance and buyer/supplier relationship. The purchasing performance here includes product quality and total costs according to Carter and Narasimhan (1996), and buyer/supplier relationship includes buyer/supplier cooperation and buyer dependence on the supplier based on the study of Larson and Kulchitsky (1998). Therefore, the objectives of the study are as follows:

- 1.3.1 to identify whether single sourcing and sole sourcing have a different impact on purchasing performance, which includes product quality and total costs,
- 1.3.2 to identify whether single sourcing and sole sourcing have a different impact on buyer/supplier relationship, which includes buyer/supplier cooperation and buyer dependence on the supplier.

1.4 The Scope of the Research

The study on the two purchasing strategies and their impacts on China manufacturing industry are limited only to one industry. To investigate the impacts of the two purchasing strategies, China textile industry is selected because the industry is taking toward a brand new development way. How to enter and share the top quality textile market, improve its product quality, improve purchasing performance, and finally improve their profitability are major problems of China's domestic textile enterprises. The investigated target of the study is the fabric manufacturer, who transfers yarn into fabric, and the investigation is taken in Ningbo area. The reason to select Ningbo area is because it is one of the four major and advanced textile manufacture areas in China. Thus, the purchasing strategies adopted by fabric manufacturers in the region partly stand for Chinese textile enterprises' opinions.

1.5 Limitations of the Study

The study on the impacts of purchasing strategy only focuses on single sourcing and sole sourcing. Other purchasing strategies are not included in this research. The study emphasizes on textile industry. Other industries are excluded. The textile industry consists of many kinds of textile enterprises. Only fabric manufacturer is selected. Therefore, the study can't explain the impacts of the two strategies on other industries and even other types of textile enterprises. The survey region is limited to Ningbo area; hence the finding might not be generated to textile enterprises in other areas in China.

1.6 Significance of the Study

The results of the study will be beneficial for the fabric manufacturers. They will understand the impacts of single sourcing and sole sourcing on the purchasing performance and buyer/supplier relationship in their field. The study will compare the different impacts of the two strategies on the product quality, total costs, buyer/supplier cooperation, and buyer dependence on its supplier. The research can also be beneficial for other purchasing organizations in other industries. They can compare their current purchasing strategies to the two strategies, analyze the different impacts of these strategies, improve their purchasing strategies, and further improve their purchasing performance and the relationship with suppliers.

1.7 The Definition of Terms

Fax survey is a survey that uses questionnaire distributed and /or returned via fax machines (Zikmund, 2003).

Multiple sourcing means that more than one supplier is available and the buyer purchases the same product or service from more than one supplier (Tullous and Utrecht, 1992).

Performance refers to a product's primary operating characteristics (Garvin, 1987).

Personal interview is a form of direct communication in which an interviewer asks respondents questions in a face-to-face situation (Zikmund, 2003).

Population is the aggregate of all the elements that share some common set of characteristics, comprising the universe for the purpose of the marketing research problem (Naresh, 1999).

Pretest is a trial run with a group of respondents used to screen out problem in the design of the questionnaire (Zikmund, 2003).

Primary data is collected or produced by the researcher specifically to address the research problem (Naresh, 1999).

Purchasing is the acquisition of goods and service (Jay, 2001).

Secondary data is the information that has already collected for some purpose rather than the problems at hand (Naresh, 1999).

Single sourcing implies that multiple suppliers are variable for one product or service, the buyer selects and is using only one supplier (Newman, 1989).

Sole sourcing means that only one supplier is available for one product or service and the buyer is using the supplier (Newman, 1989).

Survey is a research technique in which information is gathered from a sample of people by use of a questionnaire or interview. It's a method of data collection based on communication with a representative sample of individuals (Zikmund, 2003).

Total costs are defined the purchasing price plus all the quality and logistics costs incurred in procurement of an item (Kenderdine and Larson, 1988).

Chapter 2 Literature Review

This chapter presents a review of literature and research related to the study. The review is used to support the theoretical framework, which will be discussed in chapter 3. The literature review includes purchasing strategy, purchasing performance, and buyer/supplier relationship. The second section will discuss about previous study, and final section is the summary of literature review.

2.1 Literature to Support Framework

The section introduces the concepts of purchasing strategy, purchasing performance, and buyer/supplier relationship. There are two purchasing strategies involved in the study: single sourcing and sole sourcing. Purchasing performance includes product quality, and buyer/supplier relationship involves buyer/supplier cooperation and buyer dependence on the supplier. Meanwhile, this section also discusses the relationship between the two purchasing strategies and purchasing performance, and the relationship between two purchasing strategies and buyer/supplier relationship. The above two relationships will be helpful in developing the framework of the study.

2.1.1 Purchasing Strategy

Purchasing is the acquisition of goods and service (Jay and Barry, 2001). Purchasing activity is to help the purchasing organization to identify the products and services that can be obtained externally to develop, evaluate, and to determinate the best supplier, price, and the delivery of the products and services. The product quality and cost of the purchasing company are directly related to the cost and quality of goods and services purchased. Organizations must examine a number of strategies for

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effective purchase to develop their own strategies based on the conditions. Adequate purchasing strategy directly impacts on the firm's performance. Based on a survey, Carter and Narasimhan (1996) found that single sourcing was the key variables in purchasing strategy. And sole sourcing is popularly employed by Japanese Auto manufacturers (Richarson 1993). Other studies also explored the two variables' importance. The study conducted by Dumond and Ellen (1990) explored that single source was one popular approach for cooperative buyer/supplier relationship, reducing total costs, and increasing supply assurance.

Therefore, this study focuses on the single sourcing and sole sourcing as two major variables of purchasing strategy and compares their impacts on the purchasing performance and buyer/supplier relationship.

2.1.1.1 Literature about Single Sourcing

1) There are three popular purchasing strategies in practice based on the number of available suppliers and the number of suppliers selected by the buyer to offer the product: single sourcing, sole sourcing, and multiple sourcing (Newman, 1989). Single sourcing implies that multiple suppliers are available, but the buyer selects only one supplier. The close strategy is sole sourcing, which means that only one supplier is available and the buyer purchases the product or services from the supplier. Multiple sourcing is that multiple suppliers are available, and the buyer purchases the same product or service from more than one supplier (Newman, 1998).

Single sourcing is one popular purchasing decision in practice. The decision to use single source is not a simple purchasing process. The buyers must carefully analyze potential suppliers and their capabilities to produce the products, not only to focus on current supplier. The decision involves an assessment of the risk of single

source not only by the buyer, but also by a team of supplier qualifiers who evaluate the potential suppliers (Newman, 1988). Therefore, buyers need to have clear recognition of importance, risk, and consequence of single sourcing strategy since single sourcing has become one key variable in purchasing strategy. There are many theories and views about the impacts of single sourcing.

2) Deming (1986) studied the single sourcing and its impacts. He suggested that “End the practice of awarding business on the basis of price tag, instead minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust”. Deming (1986) viewed cost as total costs, which include purchasing price as well as the cost to control quality and the cost of poor quality resulting from inadequate quality control. To adequately control the quality of critical inputs, buyers must invest considerable resources into the supplier relationship. Searching and selecting suppliers, providing training and transferring technology, educating suppliers on the buyer's processes and requirements, learning about the supplier's processes and requirements, monitoring supplier's performance and assisting supplier on process control are all necessary to reduce the variability in the supplier's product and ensure the quality. Under multiple sourcing strategy, the cost to control quality will be much more expensive than single sourcing. Even if each one is producing high quality, differences between supplier's products make quality control even more difficult and costly. In other words, the cost of setting up and coordinating with suppliers to ensure quality is lower under single sourcing than multiple sourcing.

Therefore, Deming (1986)'s opinion was that single sourcing leads to high product quality at lower total costs, greater cooperation between buyer and supplier, and non-dependence on the supplier for the buyer.

Richardson (1993) also studied the single sourcing and its impacts. Based on his study, when a buyer selects one supplier to provide one specific product, once the buyer invests considerable sources into improving the supplier's capabilities. The prospect of losing that investment will make the buyer hesitate to end the business with the single supplier. That makes the buyer depend on the supplier because of the considerable investment. If the buyer replaces the current supplier, the switching cost is considerable high. Meanwhile, doing business with a single supplier may give the supplier an opportunity to shrink or hold up the buyer with higher prices and/ or lower quality. Thus, the buyer needs to give some motivation to encourage the supplier to improve product quality, reduce total costs, and so on, or some form of governance structure in place to ensure supplier's performance.

Therefore, Richardson (1993)'s opinion was that single sourcing leads to higher costs, lower quality, and the buyer dependent on the supplier.

Richardson (1991) suggested that single sourcing leads to high supplier's product quality, and other performance. The buyer selects single source for a specific part, but there are other suppliers who also have capabilities to produce the specific part. The buyer evaluates the suppliers' product quality and other performances. The evaluation program not only limit to current single supplier. Other suppliers' product quality and other performance are also estimated by the buyer. At the end of the contract period, suppliers are compared for their product quality and new contract is awarded to top performance. Current single supplier has to improve its product quality and other performance in order to meet the buyer's requirement and get a new contract next period. Thus, single sourcing leads to high product quality.

Willis (1992) suggested that single sourcing would not lead the buyer dependent on the supplier if current and potential suppliers' performance is evaluated

by the buyer. The program is a better way to avoid the inherent risk of single source. The certification process identifies potential suppliers who are capable to meet the buyer's requirement. Once the single supplier can't meet the buyer's specification, the buyer can pick up a new supplier from other potential suppliers to provide the product.

2.1.1.2 Literature about Sole Sourcing

Sole sourcing is similar strategy to single sourcing. It occurs when only one supplier can be available, rather than single source (more than one available supplier), the buyer purchases the product or service from the supplier.

Richardson and Roumasset (1995) thought that sole sourcing might lead the sole supplier to provide high product quality and low costs. They suggested that the supplier considers the reputation of its product and provides a good performance in order to increase the business with the buyer or other potential buyers. If there is a lack of alternative buyers, the supplier is considered to depend on the buyer. When the supplier's fortune is strongly tied to the buyer's, the supplier has incentive to improve the product quality, reduce costs, and so on, and to meet the buyer's requirement.

Therefore, based on the views of Richardson and Roumasset (1995), sole sourcing also makes the supplier improve product quality, reduce costs, and so on.

2.1.1.3 Literature about Sole Sourcing and Single Sourcing

Porter (1980) in his "competitive strategy" warned that "suppliers can exert bargaining power over participants in an industry by threaten to raise price or reduce the quality of purchased goods and services. Some powerful suppliers even squeeze profitability out of an industry unable to recover cost increases in its own prices." If

purchasing company selects only one company as its supplier, the supplier would have too many choices to exercise its power. If the buyer relies on the supplier totally, then the supplier does not worry about the threat from the other suppliers' entry. Therefore, they won't be motivated to improve product quality, or to reduce costs. If the buyer doesn't represent a significant fraction of the sale, the supplier is much more prone to exert its power: raise price or reduce quality. Therefore, Porter tended to adopt multiple sources rather than one source. He suggested, "Purchase of an item can be spread among alternate supplier in such way as to improve the firm's bargaining power".

If the buyer gives to each individual a large enough volume, the suppliers must concern a risk of losing it. The supplier has to improve quality or reduce the price to meet the buyer's requirement in order to compete against other competitors. In such a way, the buyer increases the bargaining power. If the buyer relies on one supplier, when the supplier can't meet the purchasing specification, the process of replacing current supplier leads to additional switching cost. Meanwhile, the process also increases the buyer's cost. Thus, the multiple sourcing can help the buyer to avoid switching cost and to reduce the costs.

Therefore, Porter (1980)'s opinion was that single sourcing and sole sourcing leads to low quality, high cost, low cooperation, and high level of buyer dependence. This is due to the lack of competition among suppliers.

Newman (1989) suggested that there is only one supplier to provide the source under the two purchasing strategies: single sourcing or sole sourcing. Such condition might yield the buyer dependent on the supplier. If too much dependence occurs, once the supplier cannot satisfy the buyer's requirement and there is no appropriate supplier available at that time, the buyer will suffer a lot. The buyer has to spend long

time and efforts to re-seek new suppliers. This is one of risks for single sourcing or sole sourcing.

The following table summarizes the above theories of single sourcing and supplier certification.

Table 2.1: Summary of Single Sourcing and Sole Sourcing Theories

Authors	Purchasing strategy	Major opinions			
		Product quality	Total costs	Buyer/supplier cooperation	Bayer dependence
Deming (1986)	Single sourcing	Increase	Decrease	Increase	No
Richardson (1993)	Single sourcing	Decrease	Increase	—	Yes
Richardson (1991)	Single sourcing	Increase	—	—	—
Willis (1992)	Single sourcing	—	—	—	No
Richardson and Roumasset (1995)	Sole sourcing	Increase	Decrease	—	—
Newman (1989)	Single sourcing and sole sourcing	—	—	—	Yes
Porter (1980)	Single sourcing and sole sourcing	Decrease	Increase	Decrease	Yes

2.1.2 Purchasing Performance

This section introduces the purchasing performance. The study focuses purchasing performance on product quality and total costs based on Carter and

Narasimhan (1996). The detail about product quality and total costs is stated in the section respectively.

2.1.2.1 Product Quality

Quality is the totality of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs. Product quality represents the ability of a product to meet the customer needs (Jay and Barry, 2001). There are some attributes including in product quality. Managers need to develop a clear vocabulary with which to discuss quality as strategy, so quality should be broken down into managerial parts. Larson (1994) proposed to measure quality on eight critical dimensions or categories of quality that could serve as a framework for strategic analysis according to Garvin (1987)'s eight dimensions of quality theory. The eight dimensions are performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality.

Conformance

A related dimension of quality is conformance, or the degree to which a product's design and operating characteristics meet established standards.

Performance

Performance refers to a product's primary operating characteristics. For an automobile, performance would include traits like acceleration, handling, cruising speed, and comfort, for a television set, performance means sound and picture clarity, color, and the ability to receive distant stations.

Reliability

This dimension reflects the probability of a product malfunctioning or failing within a specified time period. Among the most common measures of reliability are

the mean time to first failure, the mean time between failures, and the failure rate per unit time.

Durability

A measure of product life, durability has both economic and technical dimensions. Technically, durability can be defined as the amount of use one gets from a product before it deteriorates.

Serviceability

A sixth dimension of quality is serviceability, or the speed, courtesy, competence, and ease of repair. Consumers are concerned not only about a product breaking down but also about the time before service is restored, the timeliness with which service appointments are kept, the nature of dealings with service personnel, and the frequency with which service calls or repairs fail to correct outstanding problems.

Aesthetics

Aesthetics-how a product looks, feels, sounds, tastes, or smells-is clearly a matter of personal judgment and a reflection of individual preference. Nevertheless, there appear to be some patterns in consumers' ranking of products on the basis of taste.

Delivery

Delivery is the act of delivering or distributing something. Delivery about quality refers to product or materials arrive as schedule.

Packaging

Packaging is the activities of designing and producing the container or wrapper for a product. Packaging about quality is used to protect the product or materials.

2.1.2.2 Total Costs

Total costs are defined as the purchasing price plus all the quality and logistics costs incurred in procurement of an item according to the study of Kenderdine and Larson (1988). Traditional total cost ignores the quality costs. The quality costs include internal failure, external failure, appraisal, and prevention (quality improvement) costs. Therefore, Kenderdine and Larson divided total costs into seven cost categories: customer service cost which comes from backorder and lost sales, exchange cost which results from order processing, buying and selling costs, transportation which is the cost of moving materials, warehousing cost which dues to number of stocking locations, lot quantity cost which is from production setup and vehicle loading, inventory carrying cost which includes capital, storage space, and risk, and quality cost which comes from failure, appraisal, and prevention.

Larson (1994) further studied the total costs and developed a new concept for the total costs in procurement process. He suggested that lost sales should be excluded because buyers considered the receiving end of the exchange. Lot quantity costs are emerged with order processing. Also, warehousing costs are emerged with inventory carrying cost. Therefore, Larson suggested the following eight total costs category empirical measures: inventory carrying, transportation, order process, backorder, inspection, rework, scrap, and purchasing price.

Inventory carrying

Inventory carrying includes capital cost (the return that the company could make on money that it has tied up in inventory), storage space costs, warehousing cost, and inventory risk costs (including obsolescence, pilferage, damage, etc costs).

Transportation

Transportation cost is from moving materials

Order processing

Order processing cost results from order transmittal, order entry, order verification, order handle, as well as internal and external cost such as information system costs, production setup costs, vehicle loading cost and so on.

Backorder

Backorder cost happens when the buyer place an order, but the supplier is lack of inventory availability, the buyer has to wait until the order is filled.

Inspection

Inspection cost comes from inspecting the quality of received materials or products by use an acceptable standard.

Rework and scrap

Rework and scrap cost is from defective parts or services

Purchasing price

Purchasing price is the amount of money at which something is purchased.

2.1.3 Buyer/Supplier Relationship

There are two strategic perspectives on the buyer/supplier relationship: traditional perspective and JIT (or cooperation) perspective. Traditional perspective, developed from Porter's five-force model, sees the relationship in terms of both parties competing to each other for profit margin. The purchasing company adopts multiple sources to reduce the bargaining power of supplier and avoids single source that might create the cost of switching suppliers. By keeping the supplier in relatively weak and dependent position in the relationship, the buyer can purchase materials or components at lower price and gain higher profit. Whereas JIT perspective focuses on the development of close cooperative relationship with small number of suppliers and long-term partnership. The purchasing company views suppliers as partner. The

main activities are closer coordination of schedules, cooperation on process and product improvement and development, and joint action on cost reduction, and so on. This kind of cooperation helps the buyer to reduce inventory investment, improve product quality, reduce cost, and improve profitability for both parties (Leavy, 1994).

Now, the relationship has been shifting towards cooperation perspective. The shift is based on both parties realizing common goals: decreased cost and improved quality. Buyers have realized to reduce costs associated with small supplier base: such as lower administrative and operational expenses from monitoring and qualifying fewer suppliers, a decline in scrap and rework of defective products, and reduced inventory (Spekman 1998). Quality improvement can be achieved due to the reduction of supplier base. Suppliers are willing to invest in manufacturing process to improve the product quality and meet the buyer's requirement. Meanwhile, the suppliers may obtain the security of long-term contracts, achieve the economies of scale from larger contacts, and earn much higher profit.

This study will explore the impact of single sourcing and sole sourcing on buyer/supplier relationship in China's textile industry. Based on Larson and Kulchitsky (1998), the buyer/supplier relationship is divided into two parts: buyer/supplier cooperation and the buyer dependence on its supplier.

2.1.3.1 Buyer/Supplier Cooperation

Buyer/supplier cooperation is measured by six sentiments: unity of purpose, mutual respect, and coordination of effort, mutual trust, detailed communication, and teamwork based on Larson (1994).

2.1.3.2 Buyer Dependence on the Supplier

Buyer dependence is measured as the perceived difficulty and expense of replacing the current suppliers according to Larson and Kulchitsky (1998).

2.2 Previous Studies

There are four previous studies related to the impacts of single sourcing and sole sourcing. They are critically viewed in their papers. Their research methodologies and findings are also presented in this section.

Falguni and William (1989) conducted a study on the impacts of single sourcing. They developed a questionnaire and mailed the questionnaire to purchasing directors of 234 large manufacturing firms. A number of 54 manufacturers returned the questionnaire. Descriptive statistics was used to analyze the collected data.

Falguni and William (1989) suggested that extent of single sourcing users in the U.S manufacturing firms appeared to be on the increase. The cost and quality were two popular perceptions of why firms were engaging in single sourcing. The respondents believed that single sourcing could improve the product quality, but single sourcing did not significantly reduce costs.

Presutti (1992) conducted a study about the condition of single sourcing application and the impacts of single sourcing. A structured questionnaire was delivered to the members of the Purchasing Management Association of Pittsburgh. There were 147 members in the association, and a number of 74 usable questionnaires were returned. Descriptive statistics was used to analyze the collected data.

Presutti (1992) suggested that most of respondents did not employ the single sourcing. They apparently were aware of the risk of the source dependency of single source. Only few respondents used the single sourcing. Most of respondents did not have a program to reduce the number of suppliers.

Richardson and James (1993) conducted a study to explore the impacts of single sourcing and buyer/supplier relationship on the product quality, cost, and

bargaining power of buyers and suppliers. They surveyed senior managers in purchasing in most of the major U.S firms in three industries, which included auto, heavy construction, and consumer electronics. They used a questionnaire to gather the information and followed up with a telephone interview. The questionnaire consisted of five parts: importance of supplier quality, number of suppliers, transaction costs, supplier bargaining power, and supplier performance. Descriptive statistics was used to analyze the collected data.

Through the investigation, Richardson and James (1993) suggested that half of the firms were moving to single sourcing strategy, and all the surveyed firms were starting to develop long-term and closer relationship with a few suppliers. All of them cited the benefits of lower cost and higher product quality from this kind of relationship. But there were different views on the bargaining power of suppliers and buyers. In auto industry, bargaining power of suppliers was relatively low. In other two industries, suppliers tended to have greater bargaining power.

Larson and Kulchitsky (1998) investigated the impact of single sourcing and sole sourcing on product quality, total cost, and buyer/supplier relationship. They contacted all the members of the National Association of Purchasing Management (NAPM) and asked them to fill a questionnaire. The questionnaire was divided into three major parts: purchasing strategy, purchasing performance, and buyer/supplier relationship. A number of 712 respondents returned the questionnaire. T-test was used to test the relationships between the four dependent indexes and the independent variables.

Larson and Kulchitsky (1998) suggested that single sourcing offered higher quality at lower total cost to the buyer. Moreover, the strategy caused high level of buyer/supplier cooperation, but didn't lead to the buyer dependent on the supplier.

But sole sourcing provided products with low quality and high total costs. Meanwhile sole sourcing leaded to lower level of cooperation and increased buyer dependent on the supplier.

The following table summarizes the previous researches about the impacts of single sourcing and sole sourcing.

Table 2.2: Summary of the Previous Research

Researchers	Major Findings
Falguni and William (1989)	Single sourcing can improve the product quality, but single sourcing cannot significantly reduce costs.
Presutti (1992)	Manufacturers were aware that single sourcing would lead the buyer dependent on the supplier.
Richardson (1993)	More than half of respondents adopt single sourcing strategy and think that single sourcing leads to low costs and high product quality.
Larson and Kulchitsky (1998)	Single sourcing leads to higher product quality, lower total costs, greater buyer/supplier cooperation, and no buyer dependence on the supplier. Sole sourcing leads to low quality, high costs, and low level of buyer/supplier cooperation, and buyer dependent on the supplier.

2.3 Summary of Literature Review

The literature is divided into three parts. The first part emphasizes the strategic purchasing: single sourcing and sole sourcing. There are arguments for the impacts of single sourcing on purchasing performance and the buyer/supplier

relationship. For the impacts of sole sourcing, there are different views among individuals. The second part focuses on the purchasing performance. Two elements are considered in purchasing performance: product quality and total cost. Product quality and total costs are measured on eight dimensions separately. The final part is buyer/supplier relationship. In this study, the research uses two elements to analyze the relationship: cooperation and buyer dependence. Each element is analyzed on several items too. Great relationship is suggested to improve product quality and reduce total costs. Different purchasing strategies result in different relationships, and the buyer/supplier relationship influences purchasing performance as well.



Chapter 3 Research Framework

This chapter presents the research framework. The first section describes the theoretical framework. Secondly, the conceptual framework is described. The third section is the statement of hypotheses. In the fourth section, the operationaliation of the dependent variables and the independent variables are discussed. Finally, expected outcomes are presented.

3.1 Theoretical Framework

The study compares the impacts of two purchasing strategies: single sourcing and sole sourcing. Deming (1986) and Richardson (1993) studied the impact of single sourcing. Based on his study, Deming suggested that single sourcing could improve product quality, reduce total costs, and increase buyer/supplier cooperation. Meanwhile, he believed that single sourcing does not lead the buyer to depend on its supplier. But, Richardson (1993) disagreed with Deming's opinion. Based on his study, Richardson made a contrast conclusion. Thus, the study develops the single sourcing model to investigate the impacts of single sourcing in practice on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier.

As a similar strategy to single sourcing, sole sourcing is also investigated on its impacts. Richardson and Roumasset (1995) suggested that sole sourcing provides high product quality and low total costs. Porter (1980) thought that a sole source leads to reduce product quality and buyer/supplier cooperation, increase total costs, and cause the buyer dependent on the supplier. Thus, the study develops the second model, sole

sourcing model, to investigate the impacts of sole sourcing on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier.

The objective of this study is to compare the impacts of the two purchasing strategies on purchasing performance (product quality and total costs) and buyer/supplier relationship (buyer/supplier cooperation and buyer dependence on the supplier) in China's textile industry.

3.2 Conceptual Framework

As mentioned previously, purchasing strategy here consists of two parts: single sourcing and sole sourcing. The study will compare the impacts of the two different strategies on four variables: product quality, total costs, buyer/supplier cooperation, and buyer dependence on its supplier in China's textile industry. The four variables are broken down into some sub-variables respectively so that the study can measure them more accurately. This section is to introduce the details about the two purchasing strategies and the four variables.

3.2.1 Single Sourcing and Sole Sourcing

Single sourcing implies that multiple suppliers are available for one product or service, the buyer selects and is using only one supplier. In contrast, sole sourcing means that only one supplier is available for one product or service, and the buyer is using the supplier (Newman, 1989). The difference of the two strategies is how many suppliers are available. They refer to the purchasing decisions, thus, the study measures the two strategies based on whether the material is only purchased from one supplier, and whether

there is only one available supplier for the material. If the buyer purchases the material from one supplier and there is only one available supplier, the purchasing strategy is sole sourcing. If the buyer purchases the material from one supplier and there is more than one supplier, the purchasing strategy is single sourcing.

3.2.2 Purchasing Performance and Buyer/Supplier Relationship

There are two variables in purchasing performance: product quality and total costs. Buyer/supplier relationship includes buyer/supplier cooperation and buyer dependence. Thus, the four variables are used to measure the impacts of the two purchasing strategies for purchasing organizations.

Product Quality

Quality is the totality of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs. Product quality represents the ability of a product to meet the customer needs (Jay and Barry, 2001).

As mentioned previously, single sourcing and sole sourcing directly affect product quality. Meanwhile, product quality also re-affects the purchasing strategies. When the single sourcing is adopted by the buyer and the buyer does not satisfy the product quality provided by the supplier, multiple sourcing will be one other choice, which forces current supplier and potential suppliers to improve product quality when they compete for the order. Even when sole sourcing is employed by the buyer, if the supplier's product can not satisfy the buyer's requirement, the buyer can develop similar products with other supplier's products to obtain high product quality. Thus, the similar products replace current product, meanwhile, there are more than one supplier. Sole sourcing is replaced

by other purchasing strategies as well. Thus, product quality also re-affects purchasing strategy.

There are some attributes including in product quality, so it should be broken down into managerial parts. The product quality is measured on eight dimensions in the study: conformance, performance, reliability, durability, serviceability, intangibles, delivery, and packaging (Larson and Kulchitsky, 1998).

Total Costs

Total costs are defined as the purchasing price plus all the quality and logistics costs incurred in procurement of an item (Larson and Kenderdine, 1988). Larson and Kulchitsky (1998) divided the total costs into eight categories. There are inventory carrying, transportation, order processing, backorder, inspection, rework, scrap, and purchasing price.

Total costs are directly influenced by purchasing strategies. Meanwhile, total costs also re-influence the purchasing strategies. If single sourcing can not satisfy the buyer's requirement regarding the total costs, the buyer can seek a new supplier with low total costs to provide the product, or multiple sourcing is the other choice that causes the suppliers to compete for the order, then the buyer selects one appropriate supplier who offers product at lower total costs. If sole sourcing is employed by the buyer, there are also some ways to reduce total costs. For example, the buyer seeks some potential suppliers, who have potential ability to produce the product when suppliers have to reduce total costs in order to obtain the order; the buyer's sole sourcing has been replaced by other purchasing strategies. Thus, total costs also impacts the purchasing strategies selection.

The study will test the impact of the two strategies: single sourcing and sole sourcing on total costs in China's textile industry. The respondents are asked to rate the total costs according to the performance of current supplier compared with alternative suppliers on the above eight categories.

Buyer/Supplier Cooperation

Buyer/supplier cooperation is the practice of cooperating between the buyer and its suppliers, such as product development, innovation, and so on.

When single sourcing is employed by the buyer and if the cooperation can not reach a desirable level, the buyer may seek a new supplier and change current supplier with other suppliers. If there is only one supplier and the buyer/supplier cooperation can't meet the buyer's requirement, the buyer can seek potential supplier, who has potential ability to produce the product. The buyer has more than one supplier to cooperate in product design, development, innovation, and so on. Meanwhile, there is more than one supplier, so the sole sourcing is replaced by other purchasing strategies. Thus, the buyer/supplier cooperation also affects the purchasing strategy.

This study will test the buyer/supplier cooperation under the two strategies: single sourcing and sole sourcing in practice. Buyer/Supplier Cooperation is measured on six items in this study: unity of purpose, mutual respect, coordination of effort, mutual trust, detailed communication, and teamwork (Larson and Kulchitsky, 1998).

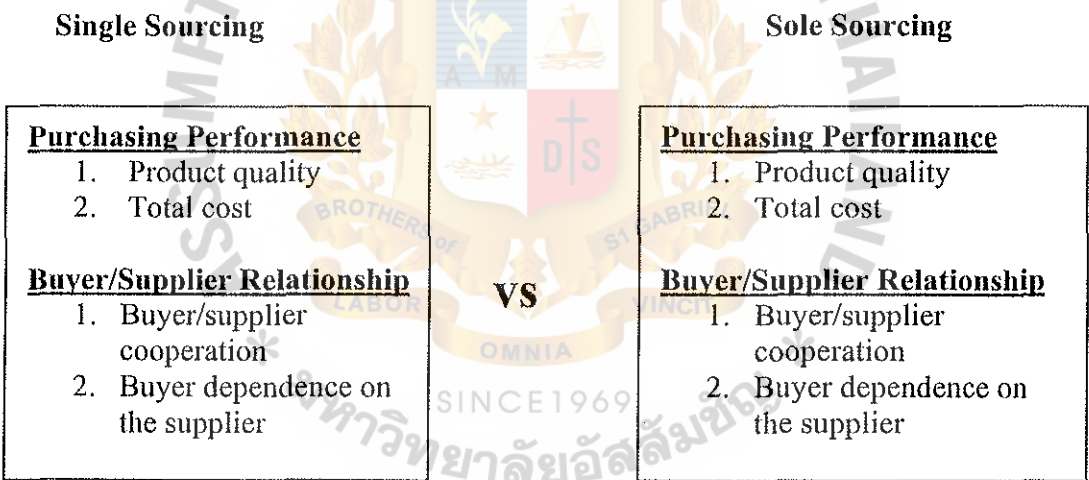
Buyer Dependence

There is no buyer who wants to depend on the supplier, so once the buyer depends highly on the supplier, the buyer will have to consider changing current purchasing strategy. If single sourcing or sole sourcing is employed by the buyer and the buyer wants to reduce the level of buyer dependence on its supplier, multiple sourcing will be

one choice for the buyer, who purchases one material from more than one supplier, to reduce the dependence on one supplier. In this study, buyer dependence on the supplier is measured in terms of difficulty and expense of replacing the current supplier (Larson and Kulchitsky, 1998).

Therefore, the purchasing strategies directly impact the four items: product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier. Meanwhile, the four items also re-impact the purchasing strategies. The conceptual framework is presented in figure 3.1:

Figure 3.1: The Conceptual Framework



3.3 Statement of the Hypotheses

Hypothesis is an unproven statement or proposition about a factor or phenomenon that is of interest to the researcher (Naresh, 1999). Based on the objective and the literatures reviewed, various sets of hypotheses are stated as follows:

Ho1.1: There is no significant different impact of single sourcing and sole sourcing on product quality.

Ha1.1: There is a significant different impact of single sourcing and sole sourcing on product quality.

Ho2.1: There is no significant different impact of single sourcing and sole sourcing on total costs.

Ha2.1: There is a significant different impact of single sourcing and sole sourcing on total costs.

Ho3.1: There is no significant different impact of single sourcing and sole sourcing on buyer/supplier cooperation.

Ha3.1: There is a significant different impact of single sourcing and sole sourcing on buyer/supplier cooperation.

Ho4.1: There is no significant different impact of single sourcing and sole sourcing on buyer dependence on the supplier.

Ha4.1: There is a significant different impact of single sourcing and sole sourcing on buyer dependence on the supplier.

The study will test the above hypotheses. The variables are from two groups in each hypothesis. For example, in the hypothesis 1.1, some respondents are using the single sourcing strategy, and some manufacturers use sole sourcing. The purpose of the hypothesis 1.1 is to test whether the impact of single sourcing on product quality is different from the impact of sole sourcing on product quality. The independent sample t-test is available to test the hypothesis. The null hypothesis is that there is no significant different impact on product quality between single sourcing and sole sourcing. The alternative hypothesis is that there is a significant different impact on product quality between the single sourcing and sole sourcing, which indicates that single sourcing results in higher product quality than sole sourcing, or single sourcing results in lower product quality than sole sourcing. There are two possible results from the alternative hypothesis. Therefore, the test is two-tailed test. The processes of other hypotheses are as same as the hypothesis 1.1. All of them use independent sample t-test, and the tests are two-tailed test.

3.4 Operationalization of the Dependent and Independent Variables

There are two tables in this section, which consist of the table of the operationalization of purchasing strategy and the table of the operationalization of variables.

Table 3.1: Operationalization of Purchasing Strategy

Concepts	Conceptual Definitions	Operational Definitions	Level of Measurement
Single sourcing	Multiple suppliers are available, but the buyer selects only one supplier for the same product or service	Whether the material is only purchased from one supplier, and whether there is only one available supplier for the material	Nominal Scale
Sole sourcing	Only one supplier is available for one product or service, and the buyer is using the supplier	Whether the material is only purchased from one supplier, and whether there is only one available supplier for the material	Nominal Scale

Table 3.2: Operationalization of Variables

Concepts	Conceptual Definitions	Operational Definitions	Level of Measurement
Conformance	The degree to which a product's design and operating characteristics meet established standards	Degree to which the material's design and operating characteristics meet the buyer's requirement	Interval Scale
Performance	A product's primary operating characteristics	Degree to the number of primary operating characteristics in the material	Interval Scale
Reliability	The probability of a product malfunctioning or failing within a specified time period	Degree to the frequency of the material malfunctioning or failing within three months	Interval Scale
Durability	A measure of product life	Degree to the length of the material lifespan	Interval Scale
Serviceability	The speed, courtesy, competence, and ease of repair	Degree to ease and speed of the material repair	Interval Scale
Aesthetics	Aesthetics (how a product looks, feels, sounds, tastes, or smells) is clearly a matter of personal judgment and a reflection of individual preference	Degree to personal judgment toward the superiority of product quality based on the intangible attributes, such as look, feel, appearance, smell, etc	Interval Scale
Delivery	The act of delivering or distributing something	Degree to the material arriving as schedule	Interval Scale
Packaging	The activities of designing and producing the container or wrapper for a product	Degree to the material being protected by its packaging	Interval Scale

Inventory carrying cost	Inventory carrying cost includes capital cost, storage space costs, warehousing cost, and inventory risk costs	The extent of money expending in inventory carrying	Interval Scale
Transportation cost	The cost is from moving materials	The extent of money expending in moving materials from suppliers to the buyer	Interval Scale
Order processing cost	The cost from order transmittal, order entry, order verification, order handle, as well as internal and external cost such as information system costs, production setup costs, vehicle loading cost and so on.	The extent of money expending in order processing	Interval Scale
Backorder cost	The cost occurs when the buyer place an order, but the supplier is lack of inventory availability, the buyer has to wait until the order is filled	The extent of money expending in backorder	Interval Scale
Inspection cost	The cost from inspecting the quality of received materials or products by use an acceptable standard	The extent of money expending in inspecting the received materials	Interval Scale
Rework cost	The cost occurs in the process of correcting a defect or deficiency in a product or part	The extent of money expending in the process of correcting defect or deficiency in materials	Interval Scale
Scrap cost	The cost from small fragment of something broken off from the whole	The extent of expending money in the scrap materials	Interval Scale
Purchasing Price	The amount of money at which something is purchased	The extent of money expending in purchasing materials	Interval Scale

Unity of purpose	Conformity of the objectives	The level of having consistent comment on the objectives between the buyer and its suppliers	Interval Scale
Mutual respect	The condition of being honored	The level of mutual respect between the buyer and its suppliers	Interval Scale
Coordination of effort	Earnest and conscientious activity intended to coordinate parties doing something	The level of effort on coordinating about how to solve the problems facing by the buyer and its suppliers	Interval Scale
Mutual trust	The trait of believing in the honesty and reliability of others each other	The level of mutual trust between the buyer and its suppliers	Interval Scale
Detailed communication	The activity of conveying information	The level of business communication related to product quality, costs, and so on between the buyer and its suppliers	Interval Scale
Teamwork	Cooperative work done as a team	The level of cooperative work done as a team between the buyer and its suppliers	Interval Scale
Difficulty	A factor causing trouble in achieving a positive result or tending to produce a negative result	The level of difficulty of replacing the current supplier based on handling the contact with current supplier, and seeking the potential qualified suppliers	Interval Scale
Expense	Amount of money paid for goods and services	Degree of expense in replacing current supplier in terms of extent of money expending in switching cost	Interval Scale

3.5 Expected Outcomes

Based on the literature review and the previous studies, the expected outcomes of this study are that there are significant different impacts of single sourcing and sole sourcing on product quality and buyer/supplier cooperation, and there are no significant different impacts of single sourcing and sole sourcing on total costs and buyer dependence on the supplier.



Chapter 4 Research Methodology

The purpose of this chapter is to provide the overview of the research methodology. There are five sections in this chapter. The research method used in this study is described in the first section. Secondly, respondents and population of the study are identified. Next, the study will introduce the research instrument. The fourth section is data collection and gathering procedures. Finally, the statistical package for social science (SPSS) is the statistical instrument applied in this study.

4.1 Research Methodology

Research methods employed in the study are personal interview and fax survey. Personal interview is a form of direct communication in which a researcher asks respondents questions in a face-to-face situation. It is a two-way conversation between an interviewer and respondents (Zikmund, 2003). The face-to-face interaction between a researcher and respondents helps researcher to obtain complete and precise information. Fax survey is a survey that uses questionnaire distributed and /or returned via fax machines (Zikmund, 2003). The fax survey reduces the sender's printing and postage costs and can be delivered and returned faster than traditional mail survey.

The researcher directly asks respondents all the questions on the questionnaire, or deliveries the questionnaire to the respondents by fax machines and asks them to fill out the questionnaire. The original data is collected from respondents through the

above two research methods.

4.2 Respondents and Population

Population is the aggregate of all the elements that share some common set of characteristics, comprising the universe for the purpose of the marketing research problems (Naresh, 1999). This study will compare the impacts of the two purchasing strategies on purchasing performance and buyer/supplier relationship in China's textile industry. However, all the China's textile enterprises can't be covered. Meanwhile, all types of textile companies are also difficult to be investigated. Thus, the study is limited to Ningbo area and identifies the fabric manufacturers as the survey target. Fabric manufacturers are the business organizations, which transform yarn into fabric. The list of target companies is based on Ningbo yellow-page website, which is an official website supported by the government. There are 51 such fabric manufacturers in Ningbo area (Appendix B). Therefore, these 51 fabric manufacturers consist of the investigated target in the study. Because the number of manufacturers is not large, the research will survey all the companies. The population of the study should be the fabric manufacturers who employ single sourcing or sole sourcing to purchase yarn for their companies. And the respondent should be the employee in the company whose major responsibility is to purchase the yarn.

4.3 Research Instrument/Questionnaire

The data is collected through the questionnaire. The researcher develops the questionnaire in English. Because the targeted companies are located in China, the

questionnaire is translated into Chinese version (Appendix A) so that the researcher can easily and clearly communicate with the respondents about the questions and information. The two research methods: personnel interview and fax survey, are applied to collect the original data in the research procedure.

There are three main parts in the questionnaire, which are used to measure the purchasing strategy, purchasing performance, and buyer/supplier relationship.

The first part of the questionnaire is purchasing strategy, which includes single sourcing and sole sourcing in this study. The respondents are asked to select the strategies that their companies employ in practice. There are two questions in this part.

The second part of the questionnaire is about purchasing performance. According to the study of Larson and Kulchitsky (1998), product quality and total costs are applied to analyze the purchasing performance. The respondents are asked to evaluate the degree of product quality using a five-point scale (1= much lower, 5= much higher) on eight items. Similarly, respondents are also asked to rate the total costs by a five-point scale (1= much lower, 5= much higher) on other eight items. Therefore, sixteen questions are used to measure the purchasing performance.

The final part of the questionnaire is buyer/supplier relationship. Based on the research of Larson and Kulchitsky (1998), the buyer/supplier relationship is divided into buyer/supplier cooperation and buyer dependence on the supplier. There are six items to measure the level of buyer/supplier cooperation using a five-point scale (1= very low, 5= very high). The level of buyer dependence is evaluated by a five-point

scale (1= very low, 5= very high) on two items. Thus, there are eight questions formulated to measure the buyer/supplier relationship.

All the questions are constructed from the basic conceptual framework that is described in following Table 4.1 and Table 4.2:

Table 4.1: List of Questionnaire (Purchasing Strategy)

Variables	Question No.
Single Sourcing and Sole Sourcing	Q1, Q2

Table 4.2: List of Questionnaire (Variables)

Variables	Sub-Variables	Question No.
Product Quality	Conformance	Q3
	Performance	Q4
	Reliability	Q5
	Durability	Q6
	Serviceability	Q7
	Aesthetics	Q8
	Delivery	Q9
	Packaging	Q10
Total Costs	Inventory Carrying	Q11
	Transportation	Q12
	Order Processing	Q13

	Backorder	Q14
	Inspection	Q15
	Rework	Q16
	Scrap	Q17
	Purchase Price	Q18
Buyer/ Supplier Cooperation	Unity of Purpose	Q19
	Mutual Respect	Q20
	Coordination of Effort	Q21
	Mutual Trust	Q22
	Detailed Communication	Q23
Buyer Dependence on the Supplier	Teamwork	Q24
	Difficulty	Q25
	Expense	Q26

4.3.1 Pretest Questionnaire

Pretest is a trial run with a group of respondents used to screen out problems in the design of the questionnaire (Zikmund, 2003). In the pretest, the researcher is to look for the ambiguous questions and potential misunderstanding in the questionnaire. There are three basic ways to pretest. The first two ways involve screening the questionnaire with other research professionals, and the third is a trial run with a group of respondents. In the pretest procedure, the study uses the third way as the pretest method. The questionnaire is delivered to the respondents, and they are asked

to fill out the pretest questionnaire. After the questionnaire is completed by the respondents, the researcher collects the pretest questionnaire and tests the reliability of the pretest questionnaire. At least 25 copies of questionnaires in the pretest are acceptable (Vanichabuncha, 2002). Thus, in this study, 25 copies of questionnaires are distributed to the fabric manufacturers in Ningbo area.

The reliability of the four dependent variables in the pretest questionnaire is: alpha of product quality is 0.811, alpha of total costs is 0.6501, alpha of buyer/supplier cooperation is 0.6445, and alpha of buyer dependence on the supplier is 0.6882. Sekaran (2000) stated that if the reliability value was more than 0.6, a questionnaire is considered reliable. Hence the pretest questionnaire is considered reliable.

4.4 Data Collection and Gathering Procedures

The study collects the data through two basic sources: primary data and secondary data. Survey questionnaire is used to gather primary data and implement through two methods: personal interview and fax survey.

4.4.1 Primary Data

According to Naresh (1999), primary data is collected or produced by the researcher specifically to address the research problems. The data can be obtained through observations, interviews, and surveys. Survey is a research technique in which information is gathered from a sample of people by use of a questionnaire or interview. It's a method of data collection based on communication with a representative sample of individuals (Zikmund, 2003).

In the procedure of data collection, the researcher uses two research methods: fax survey and personal interview. A structured questionnaire is delivered to some respondents by fax machines. They are asked to fill the questionnaires. After that, the respondents return the completed questionnaires to the researcher. Or the researcher interviews some respondents to ask the questions in the questionnaire. The researcher fills the questionnaire based on the respondents' reply to the questions. The two methods are implemented based on the different situation.

4.4.2 Secondary Data

Secondary data is the information that has already collected for some purpose rather than the problems at hand (Naresh, 1999). In this study, secondary data sources come from some useful websites, such as Ningbo yellow page website, in which the study gathers the list of target companies.

4.5 Data Analysis

The statistical package for social science (SPSS) is used to summarize and analyze the primary data. The statistical procedures used in the study are descriptive statistic and the inferential statistic. Thus, the collected data will be summarized into the two parts. The descriptive statistic is the method that is used to describe or summarize information about a population or sample (Zikmund, 2003). Meanwhile, the inferential statistic is used to make inferences or judgments about a population on the basis of a sample (Zikmund, 2002). In this study, independent sample t-test is applied to test the significance of the hypotheses.

4.5.1 Descriptive Statistic

Using the descriptive statistic, the frequency and the percentage of the population information will be summarized (Zikmund, 2003). In the study, the descriptive statistic is used to describe the sample size of the two purchasing strategies.

4.5.2 Independent Sample T-Test

As mentioned previously, t-test is a technique used to test the hypotheses that the mean scores on some interval scaled variables are significantly different for two independent samples or groups (Zikmund, 2003). The mean of a set of quantitative data is the sum of the measurements divided by the number of measurements contained in the data set (James et al., 2001). In this study, independent sample t-test, one type of t-test, tests whether the mean of a single variable for subjects in one group differs from that in another.

The t-test is used when the number of observations (sample size) is small and the population standard deviation is unknown. To use the t-test for difference of means, t-test assumes that the two samples are drawn from normal distributions of means (Sheridan and Lyndall, 2003). Thus, before t-test is used to analyze the collected data, the study will test whether the means of collected data for each set of variables are normal distribution.

Because the standard deviation is unknown, the levene's test of t-test tests whether the spread of the two groups variances are equal or not. If the observed significance level of the test is less than 0.05, the study uses the separate variance

t-test for means. If the test is greater than 0.05, people use the pooled variance t-test for means (Sheridan and Lyndall, 2003).

In most cases comparisons are between two groups means $(\bar{x}_1 - \bar{x}_2)$. A verbal expression of the formula for t is as follows:

$$T = (\text{mean 1} - \text{mean 2}) / \text{variability of random means}$$

Thus, the t-value is a ratio with the information about the difference between means (provided by the sample) in the numerator and the random error in the denominator. The question is whether the observed differences have occurred by chance alone (Zikmund, 2003). To calculate t, the following formula is used:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S_{(\bar{x}_1 - \bar{x}_2)}},$$

Where:

$\bar{x}_1$ = The mean of group 1,

$\bar{x}_2$ = The mean of group 2,

$S_{(\bar{x}_1 - \bar{x}_2)}$ = Pooled, or separate, standard error of between means.

If the two groups are pooled variance, to calculate the pooled standard error of the difference between means of independent samples, t-test uses this formula

$$S_{(\bar{x}_1 - \bar{x}_2)} = \sqrt{\left(\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \right) \left(\frac{1}{n_1} + \frac{1}{n_2} \right)},$$

If the two groups are separate variance, t-test uses this formula

$$S_{(\bar{x}_1 - \bar{x}_2)} = \sqrt{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} \right)},$$

Where:

s_1 = Variance of group 1,

s_2 = Variance of group 2,

n_1 = Sample size of group 1,

n_2 = Sample size of group 2.

The study applies two purchasing strategies: single sourcing and sole sourcing, and product quality as an example to explain how t-test is used to test the hypothesis. In the calculating procedure of t-test, the respondents are divided into two groups: group A and group B. Group A is the kind of the respondents who adopt the single sourcing strategy. Another group B is the kind of the respondents who adopt the sole sourcing strategy. T-test also defines group 1 as the collection of values that the members of group A evaluate about the product quality and group 2 as the collection of values that the members of group B evaluate about the product quality.

The study will test whether the means of collected data are normal distribution before the study uses the t-test. If the data is normal distribution, t-test can be used to test the hypothesis. If not, the study can't apply t-test to analyze the collected data. Meanwhile, t-test tests the spread of the two groups. Whether they are equal or not can be obtained through Levene's test. Thus, in t-value formula as follow:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s_{(\bar{x}_1 - \bar{x}_2)}},$$

$$s_{(\bar{x}_1 - \bar{x}_2)} = \sqrt{\left(\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \right) \left(\frac{1}{n_1} + \frac{1}{n_2} \right)} \quad (\text{Pooled variable}),$$

$$\text{or, } s_{(\bar{x}_1 - \bar{x}_2)} = \sqrt{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} \right)} \quad (\text{Separate variable}),$$

Where:

$\bar{x}_1$ = The mean of group 1,

$\bar{x}_2$ = The mean of group 2,

s_1 = Variance of group 1,

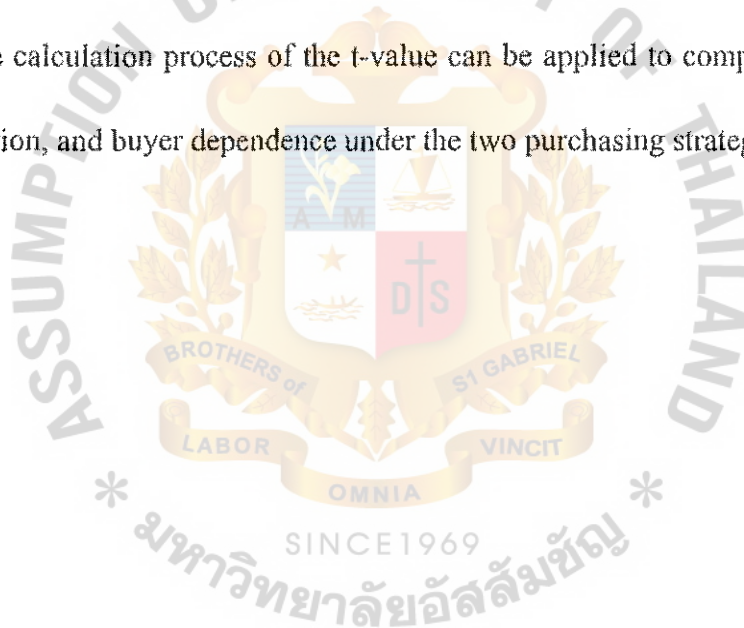
s_2 = Variance of group 2,

n_1 = The number of group A,

n_2 = The number of group B.

Therefore, t-value can be computed.

The above calculation process of the t-value can be applied to compute the total costs, cooperation, and buyer dependence under the two purchasing strategies.



Chapter 5 Data Analysis

This chapter provides the data analysis and the findings. The primary data is collected from 51 companies. The chapter is divided into three sections. First, the study describes the general information of the respondents. Secondly, Independent Sample t-test is applied to test the hypotheses. Finally, the summary of hypotheses test is presented.

5.1 Descriptive Statistic

The descriptive statistic is the method that is used to describe or summarize information about a population or sample (Zikmund, 2003). In the study, descriptive table presents the general information of the targeted companies. The table 5.1 describes sample size of single sourcing, sample size of sole sourcing, and sample size of other strategies that are different from single sourcing and sole sourcing.

Table 5.1: Sample Size of Single Sourcing and Sole Sourcing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	single sourcing	16	31.4	31.4	31.4
	sole sourcing	10	19.6	19.6	51.0
	others	25	49.0	49.0	100.0
	Total	51	100.0	100.0	

A number of 51 companies involved in the survey. There are only 16 companies using the single sourcing strategy, which is 31.4% of the target companies. Meanwhile, there are 10 companies employing sole sourcing strategy. It is 19.6% of the target companies. Almost half of target companies do not use single sourcing or sole sourcing. Therefore, the 26 companies, who employ single sourcing or sole sourcing, consist of the population of the study. The study will compare the impacts

of the two purchasing strategies on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier.

5.2 Test of Hypotheses

Independent Sample t-test tests whether the mean of a single variable for subjects in one group differs from that in another (Zikmund, 2003). The objective of the study is to investigate and compare the impacts of two purchasing strategies on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier. The two strategies are single sourcing and sole sourcing. The study compares their impacts on the above four items, respectively.

Test for Normality

Before using independent sample t-test to test the hypotheses, according to the t-test's requirement, the study needs to identify whether the collected data is normal distribution or not. The below table is the results of normality test.

Table 5.2: Test for Normality

Items	Significance Level (Kolmogorov-Smimov)
Product quality	0.067
Total costs	0.200
Buyer/supplier cooperation	0.118
Buyer dependence	0.200

Sheridan and Lyndall (2003) stated that if the significant level of Kolmogorov-Smimov is greater than 0.05, then normality is assumed. The significances of the four items are all more than 0.05. Thus, the normality of each item is considered. The independent sample t-test can be used to test the hypotheses.

The results of the t-test are in Appendix C. The researcher develops the Table 5.3 based on the results of t-test.

Hypotheses Test of the Study

As mentioned in chapter 3, there are four hypotheses to test the impacts of single sourcing and sole sourcing on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier. Here, to make it short the four hypotheses are combined into one hypothesis as follows:

Ho: there are no significant different impacts of single sourcing and sole sourcing on (1) product quality, (2) total costs, (3) buyer/supplier cooperation, and (4) buyer dependence on the supplier.

Ha: there are significant different impacts of single sourcing and sole sourcing on (1) product quality, (2) total costs, (3) buyer/supplier cooperation, and (4) buyer dependence on the supplier.

Table 5.3: Outcomes of Hypotheses Test

	Single sourcing	Sole sourcing	t-value	Sig. (2-tailed)
Sample size	16	10		
Product quality	3.76 [#]	3.22 [#]	3.50**	0.002
Total costs	3.51 [#]	3.73 [#]	-1.05*	0.306
Buyer/supplier cooperation	3.94 [#]	3.55 [#]	2.43**	0.023
Buyer dependence	2.56 [#]	3.40 [#]	-2.44**	0.022

** based on pooled variances.

* based on separated variance.

[#] mean of a single variable for subjects in one group

Table 5.3 presents the results of hypotheses test for single sourcing and sole sourcing: the impacts on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier.

Based on the outcomes of hypotheses test, for the impact of single sourcing and sole sourcing on product quality, the significant level is equal to 0.002, which implies that the null hypothesis is rejected. There is a significant different impact of single sourcing and sole sourcing on product quality. The mean of product quality on single sourcing is 3.76, and the mean of product quality on sole sourcing is 3.22. Single sourcing leads to higher product quality than sole sourcing. Thus, if the buyer employs single sourcing strategy, product quality is significantly higher than the product quality, which the buyer purchases the product with sole sourcing strategy.

For the impact of single sourcing and sole sourcing on total costs, the significant level is equal to 0.306, which indicates that the null hypothesis is accepted. There is no significant different impact of single sourcing and sole sourcing on total costs. Thus, if the buyer employs single sourcing or sole sourcing to purchase one product, the total costs are not significant different based on the study.

For the impact of single sourcing and sole sourcing on buyer/supplier cooperation, the null hypothesis is rejected because the significant level is equal to 0.023. There is a significant different impact of single sourcing and sole sourcing on buyer/supplier cooperation. The mean of buyer/supplier cooperation resulted from single sourcing is 3.94, and the mean of buyer/supplier cooperation resulted from sole sourcing is 3.55. Single sourcing leads to higher level of buyer/supplier cooperation than sole sourcing. Thus, if the buyer employs single sourcing to purchase one product from a single supplier, the level of cooperation between the buyer and its supplier should be higher than the cooperation, which results from sole sourcing.

Thus, if the buyer uses single sourcing to purchase products, the buyer/supplier cooperation is higher than the cooperation resulted from sole sourcing.

For the impact of single sourcing and sole sourcing on buyer dependence on the supplier, the significant level is equal to 0.022, which indicates that the null hypothesis is rejected. There is a significant different impact of single sourcing and sole sourcing on buyer dependence on the supplier. The mean of buyer dependence on the supplier from single sourcing is 2.56, and the mean of buyer dependence on the supplier from sole sourcing is 3.40. Single sourcing leads to lower level of buyer dependence on the supplier than sole sourcing. Thus, if the buyer employs sole sourcing, the buyer depends on the supplier at higher level than single sourcing based on the study.

5.3 Summary of Hypotheses Testing

Based on the results of above hypotheses testing, the researcher summarizes Table 5.4:

Table 5.4: Summary of Hypotheses Testing

Hypotheses	Analysis	
	Accept	Reject
Ho1.1: There is no significant different impact of single sourcing and sole sourcing on product quality.	Accept	Reject
Ho2.1: There is no significant different impact of single sourcing and sole sourcing on total costs.		
Ho3.1: There is no significant different impact of single sourcing and sole sourcing on buyer/supplier cooperation.		Reject
Ho4.1: There is no significant different impact of single sourcing and sole sourcing on buyer dependence on the supplier.		Reject

Chapter 6 Conclusion and Recommendation

This chapter provides the summary of the findings, a conclusion of the research results, and the recommendation for the study. There are three sections in this chapter. The first section is the conclusion of the study. Secondly, the recommendation of the study is suggested. Final section introduces the further research.

6.1 Conclusion of the Study

The study focuses on the fabric manufacturers in Ningbo area. The questionnaire helps the researcher to collect the primary data. Based on the data collected from 51 companies and hypotheses test, the researcher summarizes the sample size of the two purchasing strategies and the results of hypotheses test.

According to the investigation, there are 31.4 percent of fabric manufacturers adopting single sourcing strategy; they select one supplier to provide yarn although there is more than one available supplier (see table 5.1). Only 19.6 percent of companies use sole sourcing strategy in Ningbo area. Based on the above information, the researcher selects the 51 percent of fabric manufacturers (26 companies) as a population of the study to investigate and compare the impacts of single sourcing and sole sourcing on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier.

The results of hypotheses test indicate that there is a significant different impact of single sourcing and sole sourcing on product quality. Single sourcing leads to higher product quality than sole sourcing. As mentioned by Porter (1980), the sole supplier does not worry about the threat from potential suppliers because there is only

one available supplier in practice. The supplier does not have motivation to improve product quality. So, sole sourcing leads to lower product quality. But, when the single sourcing is employed by the buyer, as mentioned by (Richardson, 1991), the current supplier worries about potential suppliers to replace it to provide the product at the end of contract period. If there are potential suppliers with top performance, the single supplier has to improve its product quality and other performance to meet the buyer's requirement. Thus, single sourcing leads to higher product quality than sole sourcing.

The outcomes of hypotheses test show that there is no significant different impact of single sourcing and sole sourcing on total costs. When the buyer purchases one product from one supplier, as mentioned by Porter (1980), the supplier has more opportunities to exercise its bargaining power. The supplier can threat to raise price and other costs. Thus, the two purchasing strategies have similar impact on total costs.

The results of hypotheses test show that there is a significant different impact of single sourcing and sole sourcing on buyer/supplier cooperation. Single sourcing results in higher level of buyer/supplier cooperation than sole sourcing. As mentioned by Deming (1986), when the buyer selects one single supplier to provide the product, the buyer has more time and effort to cooperate with single supplier compared to multiple suppliers. They work as a team, coordinate to solve the problems, trust each other, and so on. When there is only a sole supplier, the supplier does not worry about the threat from other potential suppliers and does not have motivation to cooperate with the buyer (Porter, 1980). Thus, sole sourcing leads to a lower level of buyer/supplier cooperation compared to single sourcing.

The outcomes of hypotheses test show that there is a significant different impact of single sourcing and sole sourcing on buyer dependence on the supplier. Sole sourcing leads the buyer to depend on the supplier at higher level than single sourcing. As mentioned by Willis (1992), when single sourcing is employed by the buyer, once the supplier's product can not be satisfied by the buyer, the buyer can select other suppliers to provide the product to avoid the buyer dependent on the supplier. But, for sole sourcing, as mentioned by Newman (1989), if there is only a sole supplier and no potential supplier can be available, the buyer has to rely on the sole supplier to offer the product. Thus, sole sourcing leads the buyer dependent on the supplier at a higher level than single sourcing.

6.2 Recommendations

The results of hypotheses test suggest that single sourcing, compared to sole sourcing, leads to higher product quality, greater buyer/supplier cooperation, and lower level of buyer dependence on the supplier. If there is only one available supplier for a specific part in practice, the researcher suggests that the buyer seeks some potential suppliers who have potential abilities to produce that specific part. The purpose of the suggestion increases the number of available suppliers, and the buyer has more choices to select a supplier to provide that part. Thus, the buyer can employ single sourcing to replace sole sourcing. Based on the outcomes of hypotheses test, single sourcing leads the buyer to receive higher product quality, strength buyer/supplier cooperation, and maintain lower level of buyer dependence on the supplier compared to sole sourcing.

6.3 Further Research

There are three popular purchasing strategies in practice based on the number of available suppliers and the number of suppliers selected by the buyer to offer the product: single sourcing, sole sourcing, and multiple sourcing (Newman, 1989). From the findings, only 51 percent of target companies employ single sourcing or sole sourcing. Thus, there are more fabric manufacturers in Ningbo area using multiple sourcing strategies in practice. Further research can investigate the impacts of multiple sourcing on the product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier. The further research can compare the different impacts among single sourcing, sole sourcing, and multiple sourcing in textile industry and other industries. Then, the purchasing organization can understand the three purchasing strategies and realize their impacts on product quality, total costs, buyer/supplier cooperation, and buyer dependence on the supplier more clearly.

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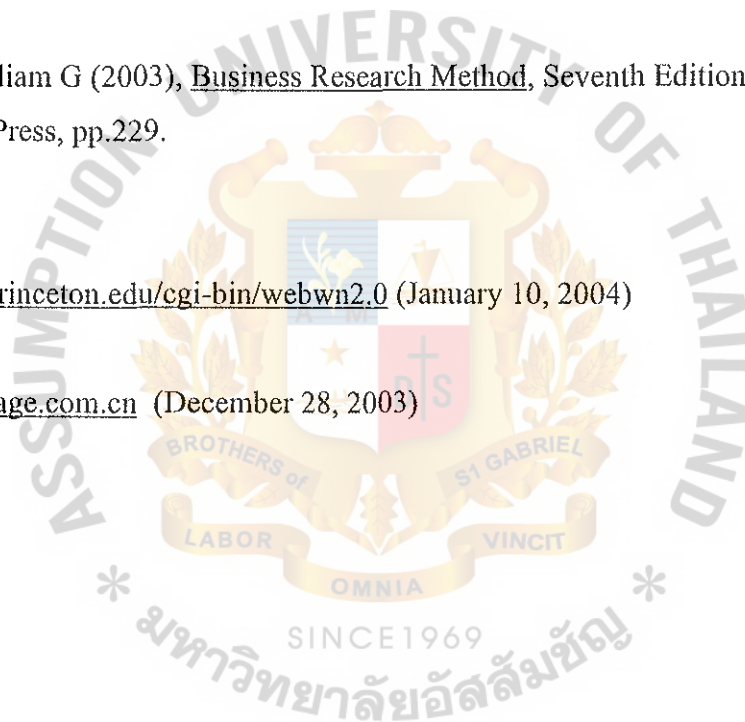
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Appendix A
(Questionnaire)

Questionnaire

Dear Sir (Madam):

This questionnaire is designed to collect information for the thesis entitled “The Impacts of Single Sourcing and Sole Sourcing on the Purchasing Performance and Buyer/Supplier Relationship”. There are four parts in the questionnaire. All the information is for academic purpose. Your full-cooperation in responding to all items in this questionnaire would be very much appreciated. Thank you very much for your kind cooperation.

Part 1

The following question helps the interviewer to identify the respondent, whose major responsibility is to purchase yarn for the company. If the answer is yes, please continue the questionnaire. If the answer is no, please stop to fill the questionnaire. Based on your current situation, please select only one answer for the question by marking “√” before your choice of the answer.

Are you responsible for purchasing yarn for your company?

___1. Yes ___2. No

The purpose of next three parts: part 2, 3, and 4, are to measure the purchasing strategy, purchasing performance and buyer/supplier relationship. Purchasing strategy is measured in the second part. Purchasing performance includes two variables: product quality and total costs. The two variables are measured in the third part. Similarly, buyer/supplier relationship also has two variables: buyer/supplier cooperation and buyer dependence on its supplier. They are measured in the forth part.

Before filling in the questionnaire, you only consider a frequently used yarn; purchased under “re-buy” conditions (the yarn is not new to the buyer). Further, you need to consider a preferred “supplier A” of the yarn while completing the survey.

Part 2

Purchasing strategy is measured in this part. There are two questions, which are employed to analyze your company’s current purchasing strategies. Please select only one answer in each question by marking “√” before your choice of the answer based on your company’s condition.

1. Is the yarn only purchased from supplier A?

___1. Yes * ___2. No

2. Is there only one supplier of the yarn available?

___1. Yes ___2. No

Part 3

The purpose of the part is to measure purchasing performance, which includes two variables: product quality and total costs. The two variables are measured by some items respectively. Based on the situation, please one answer for each question.

Section 1

This section is used to measure product quality. There are eight items, which are applied to evaluate the product quality. Please rate the eight items of the yarn from the preferred supplier A in comparison with less-preferred alternative supplier B in terms of the following attributes. Please select only one for each question by marking “√” before your choice of the answer. The rating begins from 1 (the yarn quality of supplier A is much lower).....5 (the yarn quality of supplier A is much higher).

- 1 = the yarn quality of supplier A is much lower
- 2 = the yarn quality of supplier A is lower
- 3 = the yarn quality of supplier A and supplier B are similar
- 4 = the yarn quality of supplier A is higher
- 5 = the yarn quality of supplier A is much higher

3. Please identify the degree of superiority of the yarn quality in terms of the yarn's design and operating characteristics meeting your company's requirement.

__1 __2 __3 __4 __5

4. Please identify the degree of superiority of the yarn quality in terms of the number of primary operating characteristics in the yarn.

__1 __2 __3 __4 __5

5. Please identify the degree of superiority of the yarn quality in terms of the frequency of the yarn malfunctioning or failing within three months.

__1 __2 __3 __4 __5

6. Please identify the degree of superiority of the yarn quality in terms of the length of the yarn lifespan.

__1 __2 __3 __4 __5

7. Please identify the degree of superiority of the yarn quality in terms of ease and speed of the yarn repair.

___1 ___2 ___3 ___4 ___5

8. Please identify the degree of the yarn quality according to personal judgment toward the superiority of product quality based on the intangible attributes, such as look, feel, package, smell, etc.

___1 ___2 ___3 ___4 ___5

9. Please identify the degree of superiority of the yarn quality in terms of the yarn arriving as schedule.

___1 ___2 ___3 ___4 ___5

10. Please identify the degree of superiority of the yarn quality in terms of the yarn being protected by the packaging.

___1 ___2 ___3 ___4 ___5

Section 2

In this section, total cost will be measured. There are eight items, which are used to evaluate the total costs. Please compare the performance of supplier A on every item to the performance of less preferred alternative supplier B in terms of following attributes. Please select only one answer for each question by marking “√” before your choice of the answer. The rating begins from 1 (the extent of spent money on supplier A is much lower).....5 (the extent of spent money on supplier A is much higher).

- 1 = the extent of spent money on supplier A is much lower
- 2 = the extent of spent money on supplier A is lower
- 3 = the extent of spent money on supplier A and B are similar
- 4 = the extent of spent money on supplier A is higher
- 5 = the extent of spent money on supplier A is much higher

11. Please rate your company's expense of the yarn in terms of the extent of money (RMB) expending in inventory carrying, such as capital cost, storage space costs, warehousing cost, etc.

___1 ___2 ___3 ___4 ___5

12. Please rate your company's expense of the yarn in terms of the extent of money (RMB) expending in moving yarn from suppliers to your company.

___1 ___2 ___3 ___4 ___5

13. Please rate your company's expense of the yarn in terms of the extent of money (RMB) expending in order processing, such as order transmittal, order certification, order handle, information systems cost, etc.

___1 ___2 ___3 ___4 ___5

14. Please rate your company's expense of the yarn in terms of the extent of money (RMB) expending in backorder, which occurs when the supplier is lack of inventory, your company has to wait until the order is filled.

___1 ___2 ___3 ___4 ___5

15. Please rate your company's expense of the yarn in terms of the extent of money (RMB) expending in inspecting the received yarn.

___1 ___2 ___3 ___4 ___5

16. Please rate your company's expense of the yarn in terms of the extent of money (RMB) expending in rework, which is the process of correcting a defect or deficiency in the yarn.

___1 ___2 ___3 ___4 ___5

17. Please rate your company's expense of the yarn in terms of the extent of money (RMB) expending in scrap yarn.

___1 ___2 ___3 ___4 ___5

18. Please rate your company's expense of the yarn in terms of the extent of money (RMB/Ton) expending in purchasing yarn.

___1 ___2 ___3 ___4 ___5

Part 4

The purpose of the part is to measure buyer/supplier relationship, which includes buyer/supplier cooperation and buyer dependence on the supplier. Each variable is evaluated by some items. Based on the situation, please select an answer for each question.

Section 1

In this section, buyer/supplier cooperation is measured on six sentiments. you have developed general feeling about business relationships with supplier A. Please indicate the degree to which the following feelings or actions characterize your company' relationships with supplier A. Please select only one answer for each question by marking "√" before your choice of the answer. The rating begins from 1 (buyer/supplier cooperation is very low).....5 (buyer/supplier cooperation is very high).

- 1 = buyer/supplier cooperation is very low
- 2 = buyer/supplier cooperation is low
- 3 = buyer/supplier cooperation is not high and not low
- 4 = buyer/supplier cooperation is high
- 5 = buyer/supplier cooperation is very high

19. Please identify the level of buyer/supplier cooperation based on the degree of having consistent comment on such objectives as purchasing price, quality qualification rate, etc by your company and the supplier.

__1__ __2__ __3__ __4__ __5__

20. Please identify the level of buyer/supplier cooperation based on the mutual respect between your company and the supplier.

__1__ __2__ __3__ __4__ __5__

21. Please identify the level of buyer/supplier cooperation based on the degree of the coordinating about how to solve the problems facing by your company and the supplier.

__1__ __2__ __3__ __4__ __5__

22. Please identify the level of buyer/supplier cooperation based on trust between your company and the supplier each other.

__1__ __2__ __3__ __4__ __5__

23. Please identify the level of buyer/supplier cooperation based on business communication related to product quality, cost and so on between your company and the supplier.

__1__ __2__ __3__ __4__ __5__

24. Please identify the level of buyer/supplier cooperation based on cooperative work as a team between your company and the supplier.

___1 ___2 ___3 ___4 ___5

Section 2

There are two questions, which are used to measure the buyer dependence on its supplier in the section. Please identify the level of the following two items based on your company's situation and select only one answer in each question by marking "√" before your choice of the answer. The rating begins from 1 (the buyer dependence on its supplies is very low).....5 (the buyer dependence on its supplies is very high).

- 1 = the buyer dependence on its supplies is very low
- 2 = the buyer dependence on its supplies is low
- 3 = the buyer dependence on its supplies is between high and low
- 4 = the buyer dependence on its supplies is high
- 5 = the buyer dependence on its supplies is very high

25. Please identify the level of difficulty in replacing current supplier in terms of handling the contact with current supplier, seeking potential qualified suppliers, etc.

___1 ___2 ___3 ___4 ___5

26. Please identify the degree of expense in replacing current supplier in terms of the extent of money (RMB) expending in switching costs.

___1 ___2 ___3 ___4 ___5

问卷调查

亲爱的先生(女士)：

这份问卷调查是为泰国易三苍大学的 MBA 论文而设计的。论文 “The Impacts of Single Sourcing and Sole sourcing on Purchasing Performance and Buyer/Supplier Relationship”. 所需的数据是通过这份问卷调查收集到的。获得的信息只被用于学术研究。对于您填写这份问卷里的每一项内容深表感谢。谢谢您的友好合作。

第一部分

下面的问题被用于确定被调查者。被调查者的主要职责是为本公司采购原材料。如果下面问题的答案是肯定的，请填写这份问卷调查。如果答案是否定的，请停止填写这份问卷调查。根据被访问者的情况，请对下面的问题只选择一个答案。

请问你的职责是为贵公司采购纱线的吗？

___1. 是的

___2. 不是

以下三部分是用于衡量采购策略，采购业绩，和买卖双方的关系。第二部分用于衡量采购策略。采购业绩包含两个变量：产品质量和总成本。这两个变量在第三部分中被评估。相似地，买卖双方的关系也有两个变量：买卖双方的合作和买家对卖家的依赖性。这两个变量在第四部分中被评估。

在填写这份问卷调查前，被访者只考虑一种常用的原材料，在多次重复购买的情况下。而且，在填写这份问卷时，对于这种原材料，被访问者需要考虑一个您比较喜欢的供应商 A。

第二部分

在这一部分是用于衡量采购策略。这里有两个问题用于分析被访问者的目前采购策略。根据被访问者的情况，请对每一个问题只选择一个答案。

1. 贵公司使用的这种原材料是否只从供应商 A 中购买的？

__1. 是的 __2. 不是

2. 请问这种原材料的供应商是否是唯一的？

__1. 是的 __2. 不是

第三部分

这一部分是用于衡量采购业绩的。采购业绩包含两个变量：产品质量和总成本。这两个变量各从几个方面来衡量。根据贵公司的情况，请选择答案。

第一节

这一节将从 8 个方面对于供应商产品的质量进行打分。请比较供应商 A 提供的原材料和潜在供应商 B 的原材料从这 8 个方面进行打分。请对每一个问题只选择一个答案。

1. 表示供应商 A 原材料的质量很差

2. 表示供应商 A 原材料的质量差

3. 表示供应商 A 原材料的质量一般

4. 表示供应商 A 原材料的质量好

5. 表示供应商 A 原材料的质量很好
3. 根据这种原材料的设计和基本的特征是否符合贵公司的要求，请评估请问供应商提供的产品的质量？

__1 __2 __3 __4 __5

4. 根据这种原材料应该具备的基本特征的数量，请评估请问供应商提供的产品的质量？

__1 __2 __3 __4 __5

5. 根据三个月以内，这种原材料的故障或无法使用的次数，请评估请问供应商提供的产品的质量？

1 2 3 4 5

6. 根据这种原材料的使用寿命长短，请评估请问供应商提供的产品的质量？

1 2 3 4 5

7. 根据这种原材料的维修的便利程度和维修速度，请评估请问供应商提供的产品的质量？

1 2 3 4 5

8. 根据你个人对于这种原材料的直接的直观印象，比如根据产品的包装，外观，气味等等来判断产品的质量好坏，请评估请问供应商提供的产品的质量？

1 2 3 4 5

9. 根据这种原材料是否能够象约定的时间那样准时到达，请评估请问供应商提供的产品的质量？

1 2 3 4 5

10. 根据这种原材料的包装是否能够保证产品不受损坏，请评估请问供应商提供的产品的质量？

1 2 3 4 5

第二节

这一部分，从8个方面进行评估这种原材料总成本。请对供应商A和B进行比较，对每一个问题只选择一个答案。

1 代表供应商A的这种原材料成本很高

2 代表供应商A的这种原材料成本高

3 代表供应商A的这种原材料成本一般

4 代表供应商A的这种原材料成本低

5 代表供应商A的这种原材料成本很低

11. 根据库存这种原材料而对于贵公司产生的费用，以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

12. 根据运输这种原材料而对于贵公司产生的费用，以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

13. 根据在订购这种原材料的过程中而對於贵公司产生的费用，比如订单的确认，通讯和信息费用等等以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

14. 因供应商 A 的产品不能及时供应而對於贵公司产生费用，以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

15. 根据检查这种原材料而對於贵公司产生的费用，以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

16. 根据因这种原材料不得不进行再次加工而對於贵公司产生的费用，以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

17. 因这种原材料中的次品，而對贵公司带来的费用，以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

18. 根据采购这种原材料而對於贵公司产生的费用，以钱的数量多少，请评估其成本的高低？

1 2 3 4 5

第四部分

这一部分是用于衡量买卖双方关系。买卖双方关系包含两个变量：买卖双方的合作关系和买家对于供应商的依赖性。这两个变量各从几个方面来衡量。根据贵公司的情况，请选择答案。

第一节

这一节从 6 个方面来衡量买卖双方合作关系，建立在被访问者对供应商 A 之间的商业关系的感受上，来评估这种关系的程度，请对每一个问题只选择一个答案。

1 代表买卖双方关系很差

2 代表买卖双方关系差

3 代表买卖双方关系一般

4 代表买卖双方关系好

5 代表买卖双方关系很好

19. 根据买卖双方的目标是否一致，来评估双方关系的好坏？

___1 ___2 ___3 ___4 ___5

20. 根据买卖双方合作过程中双方相互尊重对方的情况，来评估双方关系的好坏？

___1 ___2 ___3 ___4 ___5

21. 根据买卖双方在合作过程中的协调情况，来评估双方关系的好坏？

___1 ___2 ___3 ___4 ___5

22. 根据买卖双方相互信任的情况，来评估双方关系的好坏？

___1 ___2 ___3 ___4 ___5

23. 根据买卖双方之间信息和问题相互交流的情况，来评估双方关系的好坏？

___1 ___2 ___3 ___4 ___5

24. 根据买卖双方之间是否象同一个团队那样一起工作，来评估双方关系的好坏？

___1 ___2 ___3 ___4 ___5

第五节

这一节将对买家对于供应商的依赖程度进行调查。请根据被访问者的现实情况，请给予以下的内容打分，对每一个问题只选择一个答案。

- 1 代表买家对卖家的依赖性很高
- * 2 代表买家对卖家的依赖性高
- 3 代表买家对卖家的依赖性一般
- 4 代表买家对卖家的依赖性低
- 5 代表买家对卖家的依赖性很低

25. 因更换目前的供应商，根据与目前供应商的合同处理和寻找具备资格供应商的难易程度，请评估买家对于卖家依赖程度？

___1 ___2 ___3 ___4 ___5

26. 根据更换目前供应商而产生的费用上，以钱的多少，来评估买家对于卖家依赖程度？

___1 ___2 ___3 ___4 ___5

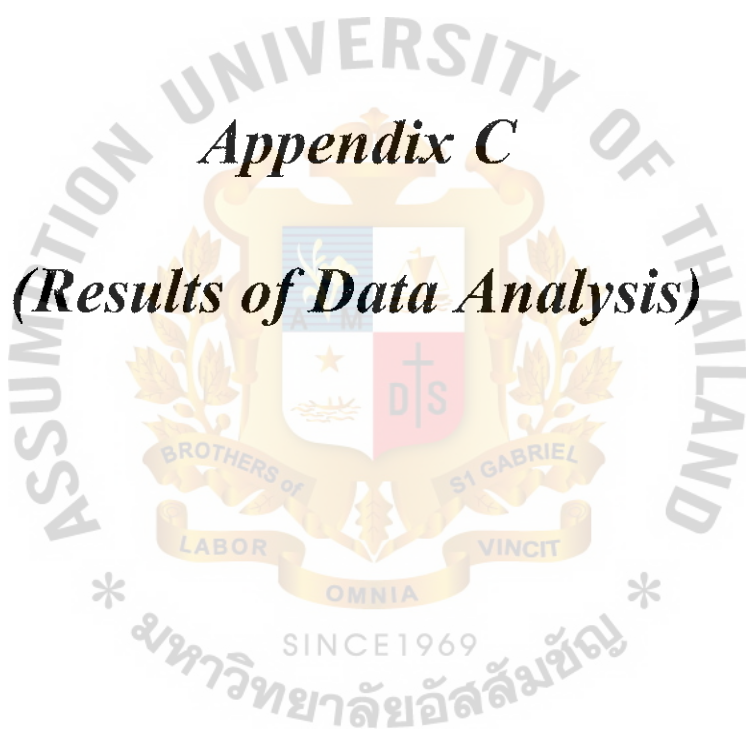


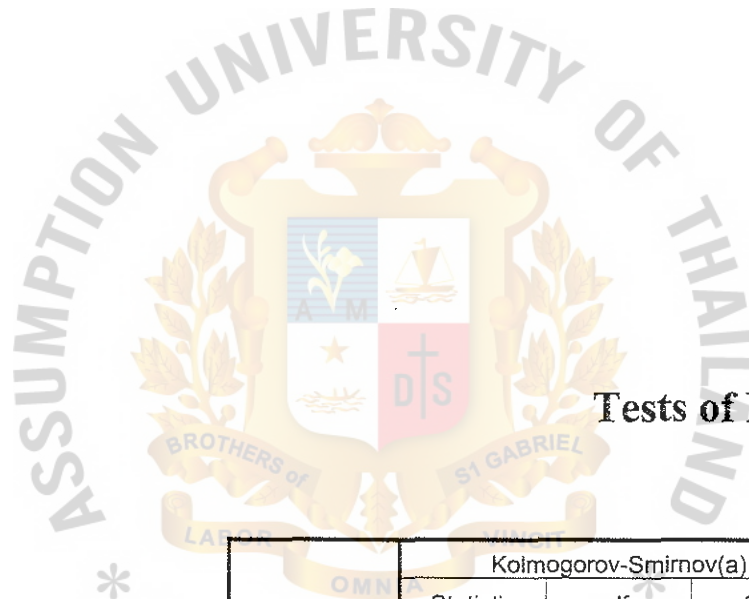
Appendix B
(List of Target Company)

List of Target Companies

1	宁波开发区德宏针织工贸有限公司	Ningbo Dehong Knitting Trade & Industry Co.,LTD
2	宁波东旺针织定型有限公司	Ningbo Dongwang Knitting Finality Co.,LTD
3	宁波申甬针织联营厂	Ningbo Shenyong Knitting Joint Operation Company
4	江东宁英针织厂	Jiangdong Ningying Knitting Factory
5	宁波华富针织厂	Ningbo HuaFu Knitting Factory
6	海曙兴泰针织有限公司	Haishu Xingtai Knitting Co.,LTD
7	海曙针织工艺织造厂	Haishu Knitting Technology Weaving Co.,LTD
8	宁波甬南针织有限公司	Ningbo Yongnan Knitting Co.,LTD
9	江东英格尔针织有限公司	Jiangdong Yinger Knitting Co.,LTD
10	宁波明达针织有限公司	Ningbo Mingda Knitting Co.,LTD
11	宁波春季针织有限公司	Ningbo Chuji Knitting Co.,LTD
12	宁波保税区丹峰针纺有限公司	Ningbo Danfeng Needle Textile Co.,LTD
13	宁波保税区丹峰针织有限公司	Ningbo Danfeng Knitting Co.,LTD
14	宁波维科集团股份有限公司针纺分公司	Ningbo Weike Group Needle Textile Co.,LTD
15	宁波维科集团股份有限公司浙东针织厂	Ningbo Weike Group Zhedong Knitting Factory
16	宁波维科精华集团股份有限公司针纺分公司	Ningbo Weike Jinghua Group Needle Textile Corporation
17	宁波瑞祥针织有限公司	Ningbo Ruixiang Knitting Co.,LTD
18	宁波新华针织厂	Ningbo Xinhua Knitwear Factory
19	海曙鑫鑫工艺针织厂	Haishu Xinxin Technology Knitwear Factory
20	宁波开发区宁闽针纺织品有限公司	Ningbo Ningmin Needle Textile Co.,LTD
21	江东中商针纺织品有限公司	Jiangdong Zhongshang Needle Textile Co.,LTD
22	海曙同欣针织品有限公司	Haishu Tongxin Knitwear Co.,LTD
23	宁波针纺织品有限公司	Ningbo Needle Textile Co.,LTD
24	海曙爱飞特针织品有限公司	Haishu Aifeite Needle Textile Co.,LTD
25	宁波爱彼针织品有限公司	Ningbo Aite Needle Textile Co.,LTD
26	宁波海伦针纺织品有限公司	Ningbo Hailun Needle Textile Co.,LTD

27	宁波惠多针织品有限公司	Ningbo Huiduo Knitwear Co.,LTD
28	江东方欣织造有限公司	Jiangdong Fangxin Weaving Co.,LTD
29	宁波兴丰织造有限公司	Ningbo Xingfeng Weaving Co.,LTD
30	江东荣新织造厂	Jiangdong Rongxin Weaving Factory
31	江东贺新织造厂	Jiangdong Hexin Weaving Factory
32	海曙涌龙纺织品厂	Haishu Yonglong Textile Factory
33	宁波维科精华集团股份有限公司床单厂	Ningbo Weike Jinghua Group Bedspread Factory
34	宁波惠盛织造有限公司	Ningbo Huisheng Weaving Co.,LTD
35	宁波新大昌织造有限公司	Ningbo Xindachang Weaving Co.,LTD
36	江北九天纺织有限公司	Jiangbei Jiutian Textile Co.,LTD
37	宁波开发区启明纺织有限公司	Ningbo Qiming Textile Co.,LTD
38	宁波中利纺织有限公司	Ningbo Zhongli Textile Co.,LTD
39	宁波纺织(控股)集团有限公司	Ningbo Textile Group Co.,LTD
40	宁波和丰纺织集团公司	Ningbo Hefeng Textile Group Corporation
41	宁波侨泰兴纺织有限公司	Ningbo Qiaotaixing Textile Co.,LTD
42	宁波轻纺城股份有限公司	Ningbo Light Textile Joint-Stock Corporation
43	宁波泰丰纺织有限公司	Ningbo Taifeng Textile Co.,LTD
44	宁波特丽梦纺织有限公司	Ningbo Telimong Textile Co.,LTD
45	江东浙东纺织有限公司	Jiangdong Zhedong Textile Co.,LTD
46	宁波海天纺织有限公司	Ningbo Haitian Textile Co.,LTD
47	江东菲诺纺织有限公司	Jiangdong Feinuo Textile Co.,LTD
48	宁波盛丰纺织有限公司	Ningbo Shengfeng Textile Co.,LTD
49	鄞州盈丰纺织有限公司	Yinzhou Yingfeng Textile Co.,LTD
50	宁波榆隆轻纺有限公司	Ningbo Yufeng Light Textile Co.,LTD
51	江东福兴纺织有限公司	Jiangdong Fuxing Textile Co.,LTD





Tests of Normality

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
quality	.165	26	.067	.925	26	.059
costs	.089	26	.200(*)	.981	26	.885
cooperation	.153	26	.118	.955	26	.305
depend	.126	26	.200(*)	.967	26	.545

* This is a lower bound of the true significance.

a. Lilliefors Significance Correction



Group Statistics

	strategy	N	Mean	Std. Deviation	Std. Error Mean
quality	single sourcing	16	3.7594	.33097	.08274
	sole sourcing	10	3.2150	.46395	.14671
costs	single sourcing	16	3.5125	.70396	.17599
	sole sourcing	10	3.7280	.33855	.10706
cooperation	single sourcing	16	3.9375	.32316	.08079
	sole sourcing	10	3.5510	.49061	.15514
depend	single sourcing	16	2.5625	.99791	.24948
	sole sourcing	10	3.4000	.51640	.16330

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
quality	Equal variances assumed	.454	.507	3.496	24	.002	.54438	.15570	.22303	.86572
	Equal variances not assumed			3.232	14.741	.006	.54438	.16844	.18481	.90394
costs	Equal variances assumed	5.844	.024	-.900	24	.377	-.21550	.23941	-.70961	.27861
	Equal variances not assumed			-1.046	22.924	.306	-.21550	.20600	-.64172	.21072
cooperation	Equal variances assumed	1.395	.249	2.431	24	.023	.38650	.15898	.05838	.71462
	Equal variances not assumed			2.210	13.928	.044	.38650	.17492	.01115	.76185
depend	Equal variances assumed	3.340	.080	-2.444	24	.022	-.83750	.34262	-1.54464	-.13036

