

**THE IMPACT OF INTRA-FIRM SOURCING STRATEGY AND
INTER-FIRM SOURCING STRATEGY ON SUPPLIES'
QUALITY, DELIVERY AND COST**

by

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ABSTRAK

Persekitaran perniagaan yang semakin hebat saingannya sejak kebelakangan ini telah mendorong firma berusaha untuk mencari sumber-sumber yang akan memberikan kelebihan kepada syarikat. Pada masa yang sama, 60%-80% daripada kos barangan dijual adalah terdiri daripada kos pembelian bahan mentah. Justeru itu, firma mula memberikan perhatian terhadap aktiviti pembelian bagi tujuan pengurangan kos. Sejajar dengan perkembangan sedemikian, kajian ini bertujuan untuk mengenal-pasti sama ada bekalan dari sumber dalaman mengatasi bekalan dari sumber luaran dari segi tahap kualiti, penghantaran dan kos, dan sama ada pencapaian tersebut telah dirangsangkan oleh faktor-faktor persekitaran atau tidak.

Aktiviti pembelian dalaman berlaku apabila sesebuah syarikat membuat pembelian bahan mentah daripada syarikat induk atau anak syarikatnya sendiri, manakala pembelian luaran wujud apabila firma membuat pembelian daripada pihak luar yang tidak berkaitan atau yang bukan berada dalam kumpulan syarikat yang sama.

Populasi untuk kajian ini adalah terdiri daripada 150 firma perkilangan elektronik dan elektrik yang terletak di sekitar Pulau Pinang. Sejumlah 150 borang soal-selidik telah diberikan kepada responden. Tetapi hanya sejumlah 82 maklumbalas sahaja yang dapat digunakan. Ini telah memberikan peratus jawapan sebanyak 55%.

Hasil kajian menunjukkan bekalan dari sumber dalaman mengatasi bekalan dari sumber luaran dari segi pencapaian kualiti, penghantaran dan kos. Disimpulkan juga bahawa faktor-faktor persekitaran seperti kuasa tawar-menawar pembekal telah merangsangkan kos bekalan dalaman, manakala aset yang spesifik didapati tidak

memberikan apa-apa kesan ke atas tahap yang berlainan di antara 2 kumpulan bekalan ini.

Kesimpulannya, kajian ini telah memberi lebaran baru kepada aktiviti pembelian dalaman untuk diterokai selanjutnya. Walau bagaimanapun, seseorang itu perlulah berwaspada apabila menggunakan hasil kajian ini memandangkan wujudnya kekangan-kekangan kajian.

ABSTRACT

In recent years, the business environment has become intensely competitive. Firms, searching for sources of competitive advantage begin to look into the potential of sourcing in adding value as purchased inputs account for 60% to 80% of cost of goods sold. Thus, the objective of this research paper is to investigate which sourcing strategy, intra-firm or inter-firm, will lead to better supplies' quality, delivery and cost and whether in the process of achieving this outcome, it is moderated by environment-related factors.

Intra-firm sourcing taken place when a firm procures materials, parts and components from within its corporate system, either a parent from its subsidiaries, or subsidiaries from their parent or from other related subsidiaries. By contrast, inter-firm sourcing occurs when a firm source from independent, unrelated suppliers.

The population for this study is the organizations that are involved in the manufacturing of electronics and electrical product located in Penang. 150 survey questionnaires were sent to organizations and only 82 usable responses were received, constituting a response rate of 55%.

The results reveal that in all of the three performance measures: quality, delivery and cost, intra-firm sourcing is seen to outperform inter-firm sourcing. Additionally, assets specificity is not a significant moderating variable on the differences in supplies' quality, delivery and cost of intra-firm and inter-firm sourcing, but bargaining power is .

This study provides an avenue for further exploration on the potential of intra-firm sourcing. However, one needs to be cautioned when adopting these research findings due to some research limitation.

Chapter 1

INTRODUCTION

1.1 Introduction

In recent years, the business environment has become intensely competitive, with heightened competition from both domestic and global arenas. Firms, searching for sources of competitive advantage in order to survive and grow in this new environment, need to constantly seek not only where costs can be reduced but also how superior products or services can be delivered to customers. Under these circumstances, both practitioners and researchers have begun to observe the relevance of effectively managing the purchasing activities to help firms reduce costs and add greater value.

Closely related to purchasing is sourcing or supplier selection. Firms must view both elements as strategically important and as a source of enhancing its competitive advantage. Sourcing's potential for adding value and improving a firm's competitive position is evident by the fact that purchased inputs account for 60% to 80% of cost of goods sold as compared to approximately 10% for direct labor. (Drucker 1986; Leenders and Blenkhorn 1988). Therefore, tremendous opportunity to improve the firm's cost competitiveness can be found in sourcing strategies.

Many firms have come to recognize the crucial role sourcing activities played in determining the overall corporate performance. Of equal or greater importance is the fact that sourcing decisions greatly impact delivery reliability, product quality and cost, thus making sourcing a key determinant of a firm's potential for added value.

1.2 Research Problems

In the world of increasing technological complexity, suppliers can offer knowledge and ideas for product development beyond the capabilities and resources of any single company. By integrating suppliers into operational requirements of a firm, an efficient and reliable flow of both materials and information from the suppliers to firm will be achieved. In addition, it also strengthens a firm's ability to grow and respond to increasing competitive demands of the market place. This will enhance the firm's competitiveness and profitability in the long run. The results are often reflected in significantly lower inventories, faster overall response times, higher quality and lower total cost.

As suppliers are strategically important and critical for firms' success, it requires the firm to source the needed materials, parts and components more proactively from the best suppliers. Many factors must be considered when selecting and awarding the business to suppliers. Thus, the lowest possible price must be weighted against such issues as the importance of supply availability, a product's complexity from technological aspect, quality and the potential for increase in delivery value.

At the same time, the sourcing strategies available for firms to exploit are numerous and varied. Firm may procure the needed materials from a single supplier or multiple suppliers. It may also buy from local or foreign sources. The firm may further source within or outside its own corporate system. The former denotes the firm that source within the parent-subsidiary companies. While the latter indicates sourcing from independent or external suppliers. Thus, determining sourcing strategies provides a major challenge to most firms.

A related question that arises in this context is which sourcing strategies should be pursued by firms which will result in better supplies' quality, delivery and cost which in turn will be translated into added profit for firms. These linkages of the relationship have not been well explored and understood.

1.3 Research Objectives

As it stands today, purchasing literature lacks empirical evidence that examines how sourcing strategies relate, if they do, to the supplies' quality, delivery and cost. Therefore, this study is an attempt to fill this gap. Specifically, the objectives of the study are:

- 1) To investigate whether intra-firm sourcing outperform inter-firm sourcing on supplies' quality, delivery and cost.
- 2) To investigate whether supplies' quality, delivery and cost resulted from engaging intra-firm and inter-firm sourcing is moderated by specific environment factor.

1.4 Definition of Variables

1.4.1 *Intra-Firm Sourcing*

The term intra-firm sourcing (Kotabe 1998) and internal sourcing (Murray, Wildt and Kotabe 1995) are used interchangeably in the purchasing literature. A firm uses intra-firm sourcing when it procures materials, parts and components from within its corporate system, either a parent from its subsidiaries, or subsidiaries from their parent or from other related subsidiaries (Murray, Wildt and Kotabe 1995).

A parent–subsidiary relationship exists when a corporation obtains controlling interest in another corporation by directly acquiring a majority (over 50 percent) of its voting stock. Although both corporations continue to exist as separate legal entities, they are essentially under a single management team (the officers and directors of the parent company) who has the control of all subsidiaries' resources and decisions. (Beams 1992).

1.4.2 *Inter-Firm Sourcing*

Inter-firm sourcing or external sourcing occurs when a firm source for required raw materials, components and parts from independent suppliers, outside its own corporate system (Murray, Wildt and Kotabe 1995).

1.4.3 *Performance Measures of Supplies*

Performance represents the effectiveness of an outcome. Performance measures of supplies is defined as the ability of firms to procure the raw materials, components, parts and subassemblies from their suppliers upon requirement at acceptable levels of satisfaction. For this study, quality, delivery and cost are used as the dimensions of performance measures of supplies.

Quality is confined to minimizing defects rates of materials procured or the purchased materials conformance to design specifications . Delivery refers to the ability of supplier to deliver the materials, parts and components to the customer at the right quantities on requested date. Cost refers to the purchase price of the materials, parts and components.

1.4.4 *Environment-Related Factors*

The environment-related factors that are identified for this study are the bargaining power of suppliers (Porter 1980), and elements of transaction cost, in particular the asset specificity (Williamson 1979).

Bargaining power of suppliers refers to the intensity of competition and it is exercised largely through price, which determines the costs of raw materials and other input. It also reflects the channel conflict caused by goal incompatibility between buyer organization and seller organization. Manufacturer may want to achieve rapid market growth through low-price policies for materials, components, parts and finished goods. The suppliers, in contrast, may prefer to pursue high profitability and work with high margins. The ability of both parties to achieve their objectives depends largely on the bargaining power of suppliers.

While assets specificity refers to investments made in specific (non-marketable) resources. The assets are specialized to that transaction and have limited or no value outside that transaction (Williamson 1979)

1.5 *Research Design*

The study first isolates sourcing strategies into intra-firm sourcing or inter-firm sourcing. Both form the independent variables of the study. The dependent variables are supplies' quality, delivery and cost. The moderating variables in this study are postulated to be the business environment factor in which a firm operates specifically the bargaining power of supplier and assets specificity.

The study is conducted by distributing a set of questionnaire to a selected sample of organizations. Careful consideration has to be given on the selection of the target responding companies such that they do source internally and externally for the

same or similar materials or components. As each organization may have thousand types of the same or similar raw materials, parts and components that they source internally and externally simultaneously, the comparison of supplies' quality, delivery and cost at organization level under these circumstances will not yield a true picture of the potential differences. Therefore, it is judged that raw material, part or component level is the most appropriate unit of analysis in this investigation.

The relationships are tested using paired-samples t-test and regression analysis. Finally, implications of the study are discussed.

1.6 Significance of the Study

Firms are increasingly examining their sourcing and procurement functions as part of an effort to improve plant operations. Three principal reasons have been associated for the increased awareness of these processes as an important strategic decision for adding value and improving a firm's competitive position.

First, purchased goods and services frequently account for 60 percent or more of the cost of manufacturing. Second, efforts at production cannot be successful at meeting customer's price and quality expectation without acceptable purchased inputs of consistent quality. Hence, many firms have come to recognize the crucial role that suppliers play in providing high quality and reliable input. Finally, careful study of the Japanese's success can be attributed to the form of supplier choice.

Therefore, it is essential that the purchase materials used to manufacture the product are obtained at competitive levels of quality, on time delivery and lowest cost in order for firms to produce and ship a high-quality competitive product. Suppliers must be reliable in terms of these elements in order to meet customer price and quality expectation while responding to rapid change. Quality and delivery problems caused

by vendors induce problems into production that are difficult and costly to accommodate or correct. Changing suppliers frequently to accommodate the level of supplies' quality, delivery and cost can lead to interruption and delays in the flow of materials to the production process. In essence, a manufacturing company cannot become a world-class competitor unless it has a strong base of suppliers that are able to provide materials and parts at competitive level. As a result, purchasing decisions and supplier selection have become a critical task for firms' long-term survival.

Despite the importance and the growing significance of sourcing strategies, there is a dearth of empirical study, in international and Malaysia context, that explicates whether intra-firm sourcing and inter-firm sourcing resulted in different level of supplies' quality, delivery and cost. The existing literature is incomplete in several important respects, in particular, the implication on supplies' quality, delivery and cost resulted from adopting intra-firm and inter-firm sourcing strategy are virtually undocumented in the extant literature.

By focusing on the Malaysia perspective, this study contributes to ascertain: (1) whether or not intra-firm sourcing is superior than inter-firm sourcing; (2) whether the moderator influence the relationship between intra-firm sourcing or inter-firm sourcing and the supplies' quality, delivery and cost; (3) proposal on potentials in sourcing strategy for firms wishing to improve their market competitiveness.

1.7 Summary

Purchased goods and services frequently account for 60%-80% of the cost of goods sold. Therefore, firms searching for sources of competitive advantage may view sourcing as strategically important for adding value and enhancing the overall corporate performance. However, many factors must be considered when selecting

and awarding business to suppliers as the decisions will greatly impact the delivery reliability, product quality and cost. At the same time, the sourcing strategies available for firms to exploit are numerous. Even though there is an existence of great potential of sourcing for adding value to firms, literature have lacked empirical evidence that explicates the relationship of sourcing strategies and supplies' quality, delivery and cost. Hence, this study is to investigate, specifically the intra-firm and inter-firm sourcing strategies and their impact on supplies' quality, delivery and cost. It is also attempted to determine whether environmental-related factors play a significant role in moderating the sourcing decision and supplies' quality, delivery and cost.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

The dynamic nature of the global market places a premium on a firm's ability to anticipate and respond to both users/customers' needs and changing competitive pressures. The whole field of purchasing and supply has received greater attention by firms as they have realized that the availability of high-quality, low cost materials and components delivered on time are important for their own competitive strategy. Suppliers must be reliable and flexible to respond to the ever-demanding customer expectation for high quality products at reasonable price.

Present day competitiveness has brought about a marked evolution in supply management, imposing on firms an increasingly close interaction with suppliers. The achievement of high-level performance in terms of cost, quality, flexibility and time to market appears ever more dependent on the quality and effectiveness of the supply network. Careful study of the Japanese's success in industrial competitiveness revealed at least some portion of that success can be attributed to the form of supplier choice and relationship. (Dobler, Burt and Lee 1984).

While generic theories from several perspectives have been used in one form or another to explain the intra-firm and inter-firm sourcing strategies, there exists no particular theory of sourcing per se. One has to knit together scattered literature on topics including operations management, strategic management, business and manufacturing strategy in order to facilitate research in this under-researched topic

and expose to practitioners the increasing strategic value of intra-firm sourcing as against inter-firm sourcing.

2.2 Intra-Firm Sourcing

Sourcing decisions often match intra-firm production sites with markets, and/or match intra-and-inter-firm components suppliers with production sites. Thus, sourcing could occur in the form of intra-or inter-firm. Multinational firms create intra-firm trade between their various units. Today, intra-firm trade managed by multinational firms is a sizeable proportion of international trade.

2.2.1 *Empirical Findings on Intra-Firm Sourcing*

One empirical study that used a product-level analysis (Kotabe 1992) concluded that internal sourcing of non-standardized components is positively related to a product's market performance. This finding on the internal component sourcing is consistent with the prediction of the internalization theory. The theory which postulates that multinational production is the result of the urge to internalize monopolistic and oligopolistic advantages across nations by multinational firms (Rugman 1986), offers a reasonably sound explanation for intra-firm sourcing. The logic of internalization theory encourages internal procurement of major components between the parent company and its affiliates and between its affiliates themselves, locally or abroad to retain a long-term competitive edge built on quality and reliability.

More recently, the importance and rationale for intra-firm sourcing in the multinational context was strengthened when Kotabe and Omura (1989) reported that market performance is associated with intra-firm sourcing in multinational firms.

They examined two dimensions of market performance (relative market share and pre-tax profitability) and sourcing strategy (internal versus external sourcing from home, market and third countries for components and final assembly) of U.S. subsidiaries of foreign multinationals at the product level. These dimensions of market performance were found to be positively related to internal procurement of major (non-standardized) components, and unrelated to assembly location (foreign versus domestic). Major components were defined as those components that could not be sourced from newly industrialized nations without technical assistance from the sourcing firm.

Recognizing that sourcing strategies should have performance implications, Kotabe and Murray (1990) developed a taxonomy of eight sourcing strategies based on three factors. Factors considered were: (1) mode of international component sourcing (internal and external), (2) degree of product innovation (low and high), and (3) degree of process innovation (low and high). For the firms studied, they concluded that a product's market performance (relative market share, sales growth rate, and pretax profitability) was positively related to internal sourcing of major components. In addition, product and process innovations were found to effect a product's market performance. More specifically, the strategy associated with the highest market performance involved high product and process innovations.

The study by Murray, Wildt and Kotabe (1995) on the "Strategic and Financial Performance Implications of Global Sourcing Strategy" cited that when a firm uses internal sourcing, the firm typically has more control over the price and the supply of components. This control facilitates managing the costs of production, reduce production disruption and leads to increased market performance. In addition, the firm has more control as well over the quality and the availability of the needed

components. By sourcing internally, it will also permit greater adaptation to changing circumstances. Firms that source internally will become more flexible in adapting to uncertainty and changes in the business environment.

Murray, Wildt and Kotabe (1995) in their study entitled "Global Sourcing Strategies of U.S. Subsidiaries of Foreign Multinationals", empirically confirmed that product-level performance was positively related to intra-firm internal sourcing of major components. They also cited that possible reasons for this are that sourcing components internally provides a firm with potential advantages, assurance in quality and delivery, and the ability to keep the proprietary technology involved in manufacturing components within the corporate system without passing it on to suppliers or competitors.

2.3 Inter-Firm Sourcing

Today, inter-company sourcing from various vendors external or independent to the firm is growing because it has become easier for any firm to source an increasing portion of its components for manufacturing from outside suppliers as global marketplace are crowded with a myriad of competitive firms (Kotabe and Murray, 1990).

At the same time, access to technology is an important reason for inter-firm sourcing for the supply of intermediate products because the cost of internalizing technology may be prohibitive for most manufacturers. Additionally, shorter product life cycle in today's competitive market prevent any one firm from acquiring all the skills needed to make the end product. In rapidly changing market environment, manufacturers have to depend on inter-firm suppliers for state-of-the-art components to be able to introduce new products frequently. Thus, inter-firm sourcing sometimes

is no longer an option but a necessity for the success of high technology manufacturers.

2.3.1 *Empirical Findings on Inter-Firm Sourcing*

Sourcing from independent suppliers, whether domestically or from abroad, appears to have other long-term consequences. First, a firm tends to assign part of the most important value-creating activities to, and also become dependent on, independent operators for assurance of components quality (Kumpe and Bolwijn 1988). Second, competition is promoted among independent suppliers to ensure continuing availability of materials and to exploit the full benefits of changing market conditions. But the suppliers are forced to operate in an uncertain business environment that inherently necessitates a shorter planning horizon. The uncertainty about the potential loss of orders to competitors often forces individual suppliers to make operating decisions that will likely increase their own long-term production and material costs. In the process, it tends to adversely affect companies sourcing components and/or finished products from those suppliers.

Kotabe (1998) in his study of "Efficiency vs Effectiveness Orientation of Global Sourcing Strategy : A Comparison of U.S and Japanese Multinational Companies" wrote that continual sourcing from independent suppliers leads to a long-term loss of the ability to manufacture at competitive cost and, as a result, loss of long-term global competitiveness. Management of the quality of major components is also required to retain the goodwill and confidence of consumers in the quality and reliability of finished goods. As a result, intra-firm sourcing of major components and finished products between the parent company and its affiliates abroad and between its

foreign affiliates themselves enables a company to retain a long-term competitive edge built on quality and reliability.

2.4 Other Perspectives of Intra-Firm and Inter-Firm Sourcing

Other field of study that may contribute to the explanation of the desire to source internally came from the strategic management and operations management area. One of the five-force model of competition (Porter 1980), bargaining power of suppliers, affects the intensity of competition in an industry. This is especially the case when there is a limited number of suppliers, when there are only a few good substitute raw materials, or when the cost of switching raw materials is especially costly. It is often in the best interest to both suppliers and producers if they can assist each other with reasonable prices, improve quality, development of new services, just-in-time deliveries, and reduced inventory costs, thus enhancing long-term profitability for all concerned.

2.4.1 *Integration Theory*

According to David (1997), forward integration, backward integration and horizontal integration are sometimes collectively referred to as vertical integration. Vertical integration allows a firm to gain control over distributors, suppliers and/or competitors. Specifically, through backward integration, manufacturers and retailers who purchase needed materials from suppliers seek ownership or increased control of a firm's suppliers. This is especially appropriate when an organization's present suppliers are expensive, unreliable or incapable of meeting the firms' needs for parts, components, assemblies or raw materials. In addition, backward integration also allows an organization to acquire needed resources quickly. More importantly, it

allows an organization the ability to stabilize the cost of its raw materials and the associated price of its products. Firms can generally negotiate more favorable terms with suppliers when they use backward integration.

This is further supported by Krajewski and Ritzman (1996), citing that because a typical firm spends more than 60 percent of its total income from sales on purchased items, low price is one key to healthy profit margin. The hidden costs of poor quality can be high, particularly if defects are not detected until after considerable value has been added by subsequent manufacturing operations. Hence, the implementation of backward integration will mean better quality and more timely delivery. It also means taking better advantage of the firm's human resources, equipment and space.

2.4.2 *Transaction Cost Theory*

The main premise of transaction cost theory is that modes of exchange should be selected that economize on costs (Williamson 1979). The theory viewed organizational activities as substitutes for markets. Transactions will be vertically integrated when costs of using market are perceived as being higher than organizing them through internal organizational growth. Thus, in transaction cost theory, Williamson suggested that cost efficiency should be an important factor to consider in determining alternative forms of exchange. It is necessary to evaluate and to minimize ultimate costs involved in market exchange. If an organization is more efficient to source the components and materials through internal organization rather than through independent outside sourcing, then, this organization should go for internal or intra-firm procurement. The theory framed the decision problem as a choice between a spot-market transactions and complete vertical integration. Vertical integration is viewed a priori as a superior means of dealing with the transaction difficulties posed

by uncertainty and specific assets. In purchasing context, one particular source of uncertainty is volume unpredictability. This is defined as the buyer's inability to (Porter, 1980; Weber, 1984). Resulting in part from volatility in the buyer's downstream market, this form of uncertainty creates an adaptation problem.

2.5 Environmental-Related Factors

Situational variables may have an impact on the appropriateness of a particular sourcing strategy and the corresponding supplies' quality, delivery and cost. This moderating effect may exist because different firms operate in different business environments that may require different sourcing strategies. The decision of intra-firm and inter-firm sourcing are greatly influenced by factors such as the bargaining power of suppliers (Porter 1980), and also elements of transaction costs (Williamson 1979).

When bargaining power of suppliers is high, the firm will use internal sourcing as it typically has more control over the price and the supply of components. This control facilitates managing the costs of production, reduces production disruption and leads to increased market performance. The bargaining power of suppliers is one of Porter's (1980) five competitive forces. The other four are threat of new entrants, bargaining power of buyers, rivalry among existing firms and threat of substitute products or services. These five forces determine the intensity of competition in an industry, which in turn affects the behavior of firms. Bargaining power of suppliers is exercised largely through price, which determines the costs of raw materials and other inputs. The availability of many alternative sources of supply may allow the firm to switch from one supplier to another or use substitute products without incurring high

switching costs. Under these circumstances, the performance, especially the prices of materials of external supplier are very likely to be cheaper than internal supplier.

Additionally, the decision of choosing internal versus external sourcing is also influenced by asset specificity, which refers to investments made in specific resources. It plays a significant part in the firm sourcing decisions. When specific assets are employed, a supplier and a buyer are 'locked into' the transaction because the assets are specialized to that transaction and have limited of no value outside the transaction (Williamson 1979). Transactions of this kind pose a greater risk to the sourcing firm if the supplier does not make the components according to specification or meet the specified deadline, because alternative sources of supply are either limited or unavailable. When asset specificity is high, the firm that source internally will have more control over the quality and availability of the needed components. (Buckley and Casson 1976). In addition, a firm may be able to ensure that the components are made according to specifications and delivered them on time. Under these circumstances, the intra-firm sourcing is anticipated to deliver better supplies' quality and delivery. This is especially important when the frequency of transactions is high. On the contrary, the inter-firm sourcing is expected to have superior supplies quality, delivery and cost when the transaction frequency and the assets specificity are low. This is attributed to the competitive market which will resulted to the availability of high quality material or component at reasonable cost. Moreover, a firm will have the opportunity to avoid investments in those specific assets.

2.5.1 Empirical Findings on Environment-Related Factors

Using a contingency model of global sourcing strategy, Murray, Kotabe and Widlt 1995 investigate the moderating effects of sourcing-related factors on the

relationship between sourcing strategy and a product's strategic and financial performance. The results lend some support in the sense that assets specificity is a significant moderator variable for financial, but not strategic performance. However, the results provided no support for bargaining power of suppliers as moderator variable.

2.6 Conclusion from the Literature Review

Generally, internal procurement of materials, components or parts between the parent company and its affiliates and between its affiliates themselves enable firms to retain a long-term competitive edge. This is because, when a firm uses internal sourcing, the firm typically has more control over the quality and the availability of the needed materials, components. Additionally, sourcing internally provides a firm with potential price advantage, assurance in quality and delivery.

From the perspective of strategic and operations management, the desire to source internally stem from the fact that firms can generally negotiate more favorable terms with suppliers when they uses backward integration. The implementation of backward integration will means better quality, more timely delivery and at lower cost.

However, situational variables may have an impact on the appropriateness of a particular sourcing strategy and the corresponding supplies' quality, delivery and cost. This moderating effect may exist because different firms operate in different business environments that may require different sourcing strategies. The decision of intra-firm and inter-firm sourcing are greatly influenced by factors such as the bargaining power of suppliers (Porter 1980), and also elements of transaction costs (Williamson 1979).

Chapter 3

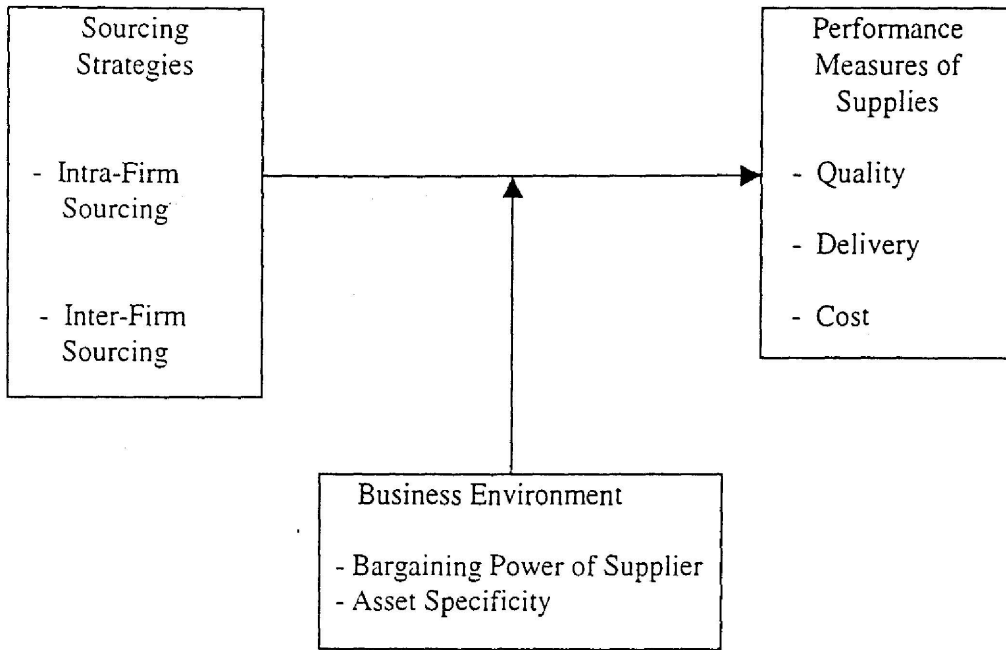
RESEARCH DESIGN

3.1 Conceptual Framework

Generally, organization practice mixed sourcing strategies depending on its operating environment and the perceived benefits that suppliers will bring along with the sourcing strategy adopted. The literature review thus far concentrated on the perspective of market, financial and strategic performance dimensions at product or component level when intra-firm and inter-firm sourcing are empirically tested against those performance dimensions. None of the researcher had used supplies' quality, delivery and cost as their performance dimensions in any of their studies.

However, this does not deter us from drawing the theoretical framework based on the literature reviewed even the performance dimensions in this studies are significantly different from previous research. This is due to the reasons that much have been quoted as possible reasons for the increased in market, financial and strategic performance are associated with the ability of firms to have more control over the quality, take the potential of price advantage and assurance in delivery. The achievements are in effect the transferred performance from supplies procured. Hence, the following diagram can depict the theoretical framework for the study.

Even though it is not explicitly cited that intra-firm sourcing or inter-firm sourcing give rise to the differences in supplies' quality, delivery and cost, however, based on the arguments put forward, it can be indirectly generalized from the literature that intra-firm and inter-firm sourcing strategy yield different levels of supplies' quality, delivery and cost.



**Figure 1 : Conceptual Model of Sourcing Strategy and Supplies' Quality,
Delivery and Cost**

3.2 Hypothesis

The intent of the study is to answer the questions pertaining to the supplies' quality, delivery and cost implication of adopting the intra-firm or internal sourcing within the parent-subsidaries system and inter-firm sourcing with external independent parties.

The ultimate objective of any firm is to make profit by providing customer with goods and services that offer better value than the competitors. In order to produce high-quality competitive product on time, it is essential that the purchased materials used to manufacture the product be obtained at competitive levels of quality, delivery and cost. The ability of suppliers to support a firm's needs and its committed objectives are highly dependent on the relationship that exists between both buyer organization and seller organization.

Hypothesis 1 : Intra-firm and inter-firm sourcing will result in different level of supplies' quality, cost and delivery.

It has been concluded indirectly in numerous literature that firms which source the needed materials, components, parts and subassemblies internally within the parent-subsidiary setting are bound to have better control over cost of materials, quality and the availability of the needed components. In addition, firms that practice intra-firm sourcing also stand to gain better assurance in delivery and are more flexible to adapt to any uncertainty circumstances.

Sub Hypothesis 1a – Intra-firm sourcing will yield better supplies' quality than inter-firm sourcing

Sub Hypothesis 1b – Intra-firm sourcing will yield better supplies' delivery than inter-firm sourcing

Sub Hypothesis 1c – Intra-firm sourcing will yield better supplies' cost than inter-firm sourcing

Scholars in the field of strategic management have conceptualized environment as one of the key constructs for understanding organizational behavior and performance (Prescot 1990). Thus, failure to include environment in examining the relationship of strategy and performance may impede our understanding of the effects of different environments to optimal sourcing strategy. Situational variables may have an impact on the appropriateness of a particular sourcing strategy and the

corresponding level of supplies' quality, delivery and cost. This effect may exist due to different business environment in which each a firm operates, which may require the adoption of different strategies. In this study, the sourcing strategy and performance relationship are postulated to be moderated by bargaining power of suppliers (Porter 1980) and certain elements of transaction costs (Williamson 1979)

The selection of these two elements are largely based on the literature, feedback from academicians and experts in sourcing field. Other elements which may have impact on the relationship are the proprietary technology and company policies. However, they are not widely discussed and supported in the literature and hence are excluded in this study

Hypothesis 2 – The impact of sourcing strategy on supplies' quality, delivery and cost are moderated by environment-related factors

The bargaining power of supplier, which is exercised largely through price and will ultimately, determines the cost of raw materials and other inputs. It is one of the five competitive forces that were introduced by Porter, 1980. When the bargaining power of suppliers is high and the firm uses internal sourcing, it will have more control on the price and the supply of components. On the other hand, when there are many suppliers in the market and vast alternative sources of supply available, it also allows the firm to switch supplier without incurring high cost. In this instance, external sourcing will provide cheaper cost for the material or component sourced.

Sub Hypothesis 2a – The impact of sourcing strategy on supplies' quality, delivery and cost are moderated by the bargaining power of suppliers.

Transactions that employed high specific assets pose a greater risk to the sourcing firm when the supplier does not provide the component according to the quality specification or meet the delivery deadline as sourcing from external supplier are limited or unavailable. Hence, the firm will have more control over the quality and availability of the needed components when it sources internally within the parent-subsidaries setting. On the contrary, for materials or components that need low asset specificity to manufacture, they are often readily available on the spot market at any quantities.

Sub Hypothesis 2b – The impact of sourcing strategy on supplies' quality, delivery and cost are moderated by assets specificity.

3.3 Research Methodology

3.3.1 Sampling

The population for this study consists of manufacturing firms in the electronics and electrical industry located in Penang. Electronics and electrical industry comprises of semiconductor, computer and computer peripherals, telecommunications and electrical products and instruments.

The population frame is drawn from about 150 companies listed in the Factory Directory published by Penang Development Corporation dated March 1997.

The objective of this study is to identify which sourcing strategies, intra-firm or inter-firm sourcing will yield greater level of supplies' quality, delivery and cost. Therefore, the samples of interest in the population will be restricted to those organizations that practice both intra-firm and inter-firm sourcing strategies for the same or similar type of materials or components. As such, using the probabilistic

method of sampling may not achieve the level of representation desired in this study. Instead, a purposive judgmental sampling method (non-probabilistic) will be used in the sampling design. This is due to the nature of the study whereby only specific targets that involve simultaneously in intra-firm and inter-firm sourcing for the similar or same materials or components are in the best position to provide the desired information for this study. As a result, only a total of 132 organizations that fulfilled the criteria set are selected to be the target respondents. The data of supplies' quality, delivery and cost will be collected at materials or components level. Hence, each organization selected may response to more than one questionnaire.

3.3.2 *Data Collection Method*

Data collection is accomplished primarily by mail and by personal delivery. The sampled companies selected are contacted in advance by telephone and the individual buyer to whom the questionnaire is to be mailed is identified. A self-addressed, stamped envelope is included to facilitate the return of the completed questionnaire. A follow up telephone call soliciting the cooperation from targeted respondents is made a week after the survey questionnaire was mailed out.

The respondents for this study comprised of purchasing/procurement managers and executives.

3.3.3 *Questionnaire Development*

The design of the questionnaire is primarily derived from the issues and questions raised in the literature reviewed. Academician with expertise in the topic is first consulted while developing the questionnaire. Personal interviews are also conducted with individuals who have vast experiences in sourcing related field. Once