CHARACTERISTICS OF PURCHASING MANAGERS THAT INFLUENCE
PREFERENCES TO ENTER BUYER-SELLER PARTNERSHIPS
BY SINGLE SOURCING

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Cathy Owens Swift, B.S., M.B.A.
Denton, Texas
May, 1992
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This research addresses the question of whether there are personal characteristics of purchasing managers that lead them to make decisions regarding buyer-seller partnerships, and supplier sourcing in particular, that may be suboptimal, therefore affecting the performance of the firm. This question warrants study due to the current business environment, in which business firms have been entering into both formal and informal buyer-seller partnerships as a means of surviving in a highly competitive environment. Setting up collaborative relationships with select suppliers, however, is not without risk. Purchasing professionals have recognized a need for these strategic relationships, but have not yet made the actual commitment. Many procurement professionals are slow to change and reluctant to shed past perceptions and attitudes. Whether this reluctance influences, with other factors, suboptimal decisions is one focus of this research.

The survey instrument was a self administered questionnaire that was sent to 2003 purchasing managers of a
variety of types of firms. The dependent variable was the sourcing preference of the purchasing manager while the independent variables were generalized trust, Machiavellianism, and negotiating style.

As hypothesized, purchasing managers who have a high level of generalized trust and those who are low Machiavellians have a preference for single sourcing. In addition, those who have a highly collaborative negotiation style have a preference for single sourcing. The study suggests it is meaningful to model the sourcing preferences of buyers as a function of individual and interpersonal characteristics. Therefore, both buying and selling firms desiring to enter single sourcing arrangements should ensure that purchasing managers have the personal characteristics that are correlated with these arrangements, by selecting, hiring and training practices.
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CHAPTER I

INTRODUCTION AND OVERVIEW

This research addresses the question of whether there are personal characteristics of purchasing managers that lead them to make decisions regarding buyer-seller partnerships, and supplier sourcing in particular, that may be suboptimal, therefore affecting the performance of the firm. An additional question focuses on whether these characteristics, if identified, can discriminate between purchasing managers who have a preference to enter into buyer-seller partnerships, in the form of single sourcing, and those who do not.

These questions warrant study due to the current business environment, in which business firms have been entering into both formal and informal buyer-seller partnerships as a means of surviving in a highly competitive environment. Setting up collaborative relationships with select suppliers, however, is not without risk. As discussed by Kierdorf (1990), purchasing professionals have recognized a need for these strategic relationships, but have not yet made the actual commitment. Many procurement professionals are slow to change and reluctant to shed past perceptions and attitudes. Whether this reluctance influences, with other factors, suboptimal decisions is one
focus of this research. Because it is an exploratory study, the assumption is made that the decision to single source is a beneficial decision to the firm.

The Study

In this study, specific characteristics of purchasing managers were examined to determine their influence on preferences towards buyer-seller partnerships. Two thousand purchasing managers, chosen from three industries, participated in the study. Because buyer-seller partnerships take a variety of forms, one dimension of the partnership, single sourcing, was investigated, while the characteristics for study include generalized trust, Machiavellianism, and negotiation style.

Key Terms

Because buyer-seller relationships come in a variety of forms, a simpler way of characterizing the relationship was used in this study. Single sourcing is generally recognized as a desirable component of a quality system. As indicated by Scheuing and Hagstrond (1990, p. 42), firms are recognizing "the futility of multiple sourcing and opting strategically for single source commitments instead."

Researchers invariably refer to the need in partnerships for openness and honesty (Scheuing and
Hagstrand 1990), as well as mutual trust, cooperation, commitment, teamwork (Weissman 1990).
Therefore, the variables of generalized trust, Machiavellianism, and negotiation style are important characteristics to measure.
The key terms utilized in the current study include buyer-seller partnerships, single sourcing, generalized trust, Machiavellianism, and negotiation style.

Buyer-Seller Partnerships

The term, buyer-seller partnership, was used in this research to describe the ongoing types of relationships that have formed between buyers and sellers in industrial markets (Dwyer, Schurr, and Oh 1987). Because of competitive pressure from offshore producers, shorter product life cycles, and changing technologies, new types of relationships are developing between business partners (Spekman 1988). The movement towards total quality programs has also encouraged firms to enter into these partnerships (Deming 1982). Firms are shifting from the traditional arm's length transactions to closer, more collaborative relationships (Adkins and Diller 1983).

When these relationships form between buyers and sellers, there are a variety of terms to describe them including ongoing relationships (Dwyer, Schurr, and Oh 1987), buyer-seller linkages (Rubin and Carter 1990), just-
in-time relationships (Frazier, Spekman, and O'Neal 1988), and value adding partnerships (Johnston and Lawrence 1988). A buyer-seller partnership is a working relationship with a long term commitment, a sense of mutual cooperation, shared risk and benefits, and other qualities consistent with the concepts and theories of participatory decision making (Henderson 1990).

Buyer-seller partnerships involve complicated networks of relationships between the firms themselves as well as within the firms. Although there have been some attempts to explain these new types of relationships (Dwyer, Schurr, and Oh 1987; Heide and John 1990) there are no theoretical frameworks that have been developed regarding buyer-seller partnerships. Heide and John (1990) suggest that the literature is "deficient" in this area. They call for additional studies to develop an understanding of variables that affect the relationship.

In addition, little empirical work has been conducted in the area of buyer-seller partnerships. These partnerships have, however, been identified as an emerging trend in industry today. By examining one component of buyer-seller partnerships, single sourcing, this research promises to provide empirical insight into this type of relationship.
Single Sourcing

Because a buyer-seller partnership is difficult to operationalize, in this study, single sourcing was used as a surrogate. Firms who have developed buyer-seller partnerships have identified single sourcing as one form of the partnership (Treleven 1987).

With more and more firms adopting total quality programs, vendor reduction programs are increasing (Segal 1989). The ultimate goal is to single source as many items as practical and to source multiple items from the same sources (Treleven 1987). Single sourcing is a rational decision of a firm to deal with one supplier for a product. It is distinguished from sole sourcing, which is a situation in which there is only one source for the product.

Generalized Trust

Generalized trust, as defined by Rotter (1967), is the generalized expectancy held by individuals that a party's word or promise is reliable and that a party will fulfill his obligations in an exchange relationship. The development of trust is a crucial factor and necessary element in a cooperative relationship (Rogers 1961).

Machiavellianism

Machiavellianism has been used to describe a person who views and manipulates others for his own purposes (Chonko
1982). Individuals who display Machiavellian tendencies are exploitative and do not think much of equality, forgiving, and honesty (Okanes 1974).

**Negotiation Style**

Negotiation is the process of reviewing, planning, and analyzing used by two parties to reach acceptable agreements (Rubin and Carter 1990). Negotiation style is negotiation behavior identified as either collaborative, competitive, sharing, avoidance, or accommodative (Thomas 1976). Individuals who exhibit a collaborative negotiation style attempt to fully satisfy their own concerns as well as the concerns of others (Schurr and Ozanne 1985). Thus, a collaborative style will be more important in cooperative relationships than other styles.

**Research Questions**

The following questions were addressed in this study:

1. Do Purchasing Managers who have a high level of generalized trust engage more frequently in single sourcing?

2. Do Purchasing Managers who exhibit Machiavellianism tend to engage more frequently in multiple sourcing?
3. Does the specific style of negotiating behavior of a Purchasing Manager influence his sourcing preference?

The research hypotheses, developed from the research questions, are presented and discussed in chapter three.

Empirical Considerations

The survey instrument was a self administered questionnaire (see appendix to chapter four) that was sent to purchasing managers of a variety of types of firms. The questionnaire was revised based on the initial test mailing. As noted earlier, the sample frame was a mailing list of 2000 members of the National Association of Purchasing Management. A complete explanation of the sampling procedure is included in chapter 3.

Dependent Variable

The dependent variable to be used is the sourcing preference of the purchasing manager. This preference was measured using a ten item scale developed during the pilot study. Based on this scale, respondents were identified as either single sourcers or multiple sourcers.
**Independent Variables**

The specific variables used in the research were trust, Machiavellianism, and negotiating style. These variables were measured using established scales presented in previous business studies. A complete explanation of the scales is provided in chapter three.

**Significance of the Research**

Before embarking on a research study, it is important to assess the significance of the research. The potential results of the current research may be useful to management in several situations.

1. **Improved performance.** Many firms have found that engaging in buyer-seller partnerships has improved the performance of the firm (Bartholomew 1984; Henderson 1990; Stralkowski and Billon 1988). The new buyer-seller partnerships have helped firms improve product cost effectiveness (Purchasing 1987; Purchasing World 1985; Treleven 1987) as well as added value to the exchange system (Johnston and Lawrence 1988; Sethuraman, Anderson, and Narus 1988). If purchasing managers are reluctant to engage in single sourcing, the productivity of the firms may be affected, as the purchasing managers may be making wrong or sub-optimal decisions regarding sourcing. By understanding the characteristics of purchasing managers that influence sourcing preference, management will be better able to
identify specific situations in which single sourcing should be considered when it may not have been before.

2. **Better training.** Findings from this research will indicate whether in fact these characteristics are salient to single sourcing decisions and therefore buyer-seller partnerships. Confirmation of the influence of these characteristics on a purchasing manager's preference for single sourcing, will enable the purchasing department to better design training programs for purchasing managers that encourage a change of attitude. A clearer understanding of cooperation in negotiation as well as procedures such as developing more trusting attitudes towards suppliers would be important to purchasing managers.

3. **Better value for the customer.** Firms which have engaged in the total quality movement have found that single sourcing leads to higher quality products (Bertrand 1986; Landeros and Monczka 1989; Newman 1988; Sethuraman, Anderson, and Narus 1988; Treleven 1987). A purchasing manager who is reluctant to engage in single sourcing may impact the quality of the product being produced as well as the total product cost. The consumer of the end product may therefore be buying lower quality products at higher prices.

4. **Development of theoretical base.** As discussed above, there is a general lack of theoretical frameworks to explain buyer-seller partnerships. This study will develop a better
understanding of some of the variables that influence the relationship and hence contribute to the theoretical base.

5. **Increased empirical knowledge.** Little empirical work has been conducted in the area of buyer-seller partnerships. These partnerships have, however, been identified as an emerging trend in industry today. By examining one component of buyer-seller partnerships, single sourcing, this research promises to provide empirical insight into this type of relationship.

**Limitations of the Research**

Although the results of the study will provide a significant contribution to the field of industrial buying behavior, there are a number of limitations to the study.

1. **Other forms of partnerships neglected.** Because there is very little research on buyer-seller partnerships, only one variable was examined, single sourcing. The research did not address additional types of buyer-seller partnerships such as JIT, EDI, systems contracts, etc. These types of agreements should be explored in another study.

2. **Other members of the buying center neglected.** This research focused only on the purchasing manager and did not look at the buying center which is composed of a group of individuals, each of which has different characteristics. Each of the individuals in the buying center may have some impact on the decision to single source.
3. **Not ultimate authority in making decisions.** Purchasing managers are becoming increasingly important in the strategic plans of the company and will have some impact on the decision to single source. Although the purchasing manager is influential in decisions regarding supplier selection, he/she is not the ultimate authority in decisions to enter buyer-seller partnerships. Thus, there may be individuals in the firm who have more control over the decision to single source as well as to enter buyer-seller partnerships.

4. **Overall corporate culture not explored.** The study focused only on the characteristics of the purchasing manager and did not address the overall corporate culture. Therefore, although a purchasing manager may have a propensity to engage in working partnerships, the firm as a whole may prefer not to enter these agreements.

5. **One side of buyer-seller dyad.** The research considered only one side of the buyer-seller relationship, that of the purchasing manager. The interrelationship with the sales representative of the supplying firm was not examined, so only one part of this important dyad was examined.

6. **Limited representation of industries.** Only three industries were examined in this study. Although this is preferable to only one industry, results cannot be generalized to all purchasing situations.
7. **Cross sectional study limitations.** Because only one study was proposed, the limitations normally associated with a cross sectional design resulted. That includes the fact that all findings can be justified only at the point in time at which they are measured.

8. **Self report bias.** The study was based on a self-administered questionnaire. Any self-report based study may have some general biases built in.

9. **Non-response bias.** Although measures were taken to assess non-response bias, there is no sure way to indicate what the results would show, were all cases (or potential respondents) contacted.

Organization of the Dissertation

This chapter has provided an overview of the study. The relevant studies in the literature are provided in chapter two. The proposed methodology of the study is presented in chapter three. The research hypotheses, research design, and techniques of analysis are the major elements of the methodology. Data analysis will be presented in chapter four. Descriptive statistics as well as results of the statistical tests will be included. Findings from the discriminant analysis will be provided as well. Finally, chapter five will include the conclusions and recommendations for further research.
Adkins, Lynn and Wendy Diller (1983), "Industry's Quiet Revolution," Dun's Business Month, 121 (June), 72-75.

Bartholomew, Dean (1984), "The Vendor-Customer Relationship Today," Production and Inventory Management, (Second Quarter), 106-121.


*Purchasing World* (1985), "Is There Really a Role for Purchasing in Improving U.S. Productivity?," 42 (September), PW3-14.


CHAPTER II

LITERATURE REVIEW

In Chapter One, the lack of a theoretical framework regarding buyer-seller partnerships was addressed (Heide and John 1990). Because there is no understanding of either the antecedents or outcomes of buyer-seller partnerships, a review of the literature involves discussing related exchange linkages.

This chapter reviews the literature regarding empirical studies on relational partnerships as well as the variables of interest in the study. The emergence of buyer-seller partnerships is discussed as well as the characteristics of the new relationships. Studies regarding single sourcing and purchasing managers, as the appropriate unit of analysis, will also be reported. In addition, a review of the applicable research concerning the independent variables of trust, Machiavellianism, and negotiation style will also be presented. Specifically, the literature review is divided into six sections: buyer-seller partnerships, single sourcing, purchasing manager as unit of analysis, generalized trust, Machiavellianism, and negotiation style.
Buyer-Seller Partnerships

Because buyer-seller partnerships are an emerging trend, the evolution of market exchanges will first be discussed.

Market Exchanges

The types of strategic posture for a firm have been identified as open market bargaining, vertical integration, and cooperative buyer-seller relationships (Landeros and Monczka 1989). According to Williamson (1985), there is a shift from the open market based exchange to what he referred to as bilateral governance, similar to the cooperative buyer-seller relationships. This cooperative relationship reduces the inefficiencies of open market transactions while allowing partners to retain a flexibility that often is lost in vertical integration (Buzzell 1983).

Integration strategies are one way for a firm to grow, but involve a number of costs to a firm including operating costs, reduced flexibility, and increased risk (Varadarajan and Rajaratnam 1986). Several recent studies have looked at non-integration strategies that offer the benefit of vertical integration but have none of the associated costs (Aaker 1984; Buzzell 1983; Harrigan 1984; Hayes and Abernathy 1980). These nonintegration strategies involve maintaining close relationships with suppliers and longer
term contracts, as well as other quasi-integration strategies.

A non integration strategy can create a competitive advantage without the drawbacks of integrating. Ford Motor Company has even undertaken a de-integration strategy by subcontracting some of its previously in-house manufactured items (Stralkowski and Billon 1988). Integration might be considered the ultimate partnership between two firms, but, as discussed above may include a major commitment of resources. Thus, more and more firms are leaning toward non-integration strategies.

Partnerships

This section discusses the factors that have brought about the changes in buyer-seller relationships. In recent years, relationships between businesses have been changing from a traditional adversarial relationship to a more cooperative one (Adkins and Diller 1983; Beck and Long 1985; Dwyer, Schurr and Oh 1987; Newman 1988, 1989; Rubin and Carter 1990). Lyons, Krachenberg, and Henke (1990) noted new styles of relating that include team decision making, longer term contracts, higher levels of outsourcing, and increased interdependence. The new stance is viewed by some as that of partnerships (Beck and Long 1975).

The traditional buyer-seller relationship involves several activities, including a large numbers of suppliers
who are played off against one another, the allocation of purchases among these suppliers, and an arm's length posture with only short term contracts (Spekman 1988b). This traditional model is an adversarial approach, the goal of which is to minimize the price of purchases. Buyers and sellers each look out for their own interests and view the other party as an opponent. Jackson (1985) posits a similar type of association with the transactional approach to buyer-seller relationships.

To achieve world class competitive status, U.S. manufacturing firms are creating this new partnership form of relationship. The changes have taken place as a result of competitive pressure from offshore producers, shorter product life cycles, and changing technologies (Bertrand 1986; Spekman 1988a).

Other factors also have brought about a change in these relationships. Just-In-Time (JIT) manufacturing showed the need to develop a more dependable supplier base. JIT also indicated the need to decrease inventories, while relying on the supplier for delivery dependability.

Firms are shifting from the traditional arm's length transaction to closer, more collaborative relationships with a smaller number of suppliers (Adkins and Diller 1983). Companies are cutting supplier lists and treating the remaining suppliers as allies sharing strategic information freely and drawing on supplier expertise in developing new
products that can meet the marketer's quality, cost, and delivery standards. This has been viewed as a broadening of the relationships between buyers and sellers, or as some have termed it, partnering (Bertrand 1986; Dwyer, Schurr, and Oh 1987; Turnbull and Wilson 1989).

Partnering is the American equivalent of Japan's family-like business relationship. It lies between the traditional American bid/buy relationship and the traditional Japanese close tie relationship. It involves a recognition of the need for the identification and solving of problems in advance.

Economics favor partnering for the buyer. The buying firm is able to manage inventory more effectively and cut considerable waste from the distribution system. A partnering or partnership agreement is a real relationship where neither side is afraid to talk about their needs, problems, disappointments or expectations. Developing strong working relationships between firms is increasingly viewed as a means to reduce costs and to add value to the exchange system (Bohn 1983; Sethuraman, Anderson and Narus 1988).

Heide and John (1990) suggested that there is no theoretical framework that explains the content of the relationship. There is no acceptance of the definition of closeness, and no research evidence on the antecedents or outcomes of these changing relationships. They call for additional studies to determine the extent of the
relationship and to develop an understanding of variables that affect the relationship. Thus, it is important to review the studies that have been done to describe these types of relationships in interorganizational exchange.

**Previous Studies of Relationships in Marketing**

There have been a number of studies in the field of marketing that have examined relationships between buyer and seller firms. These range from studies on the structure of the relationship to components of the relationship.

An interorganizational relationship is when two or more organizations transact resources among each other. It is a social action system whose end objective is to attain goals unachievable independently (Van de Ven 1976).

Williamson (1979) identified three types of governance structures: independent, dependent, and interdependent relationships. Interdependence results when both approach the relationship with a strategy of cooperation. Both are willing to establish a long term relationship, exchange information openly, and trust each other.

Adler (1966) first explored the changing relationships between two firms and described it as "symbiotic marketing." A symbiotic relationship is cooperation between companies other than those linked by the traditional marketer-marketing intermediary relationship. These relationships differ by time frame, proximity, number, level, focus, and
scope at the marketing function level (Varadarajan and Rajaratnam 1986).

Arndt (1979) identified the tendency of organizational exchange to be characterized by long term association, contractual relations and joint ownerships as "domesticated markets." These are interdependent markets in which transactions are planned and administered rather than ad hoc. Dwyer, Schurr and Oh (1987) referred to these relationships as ongoing buyer-seller relationships.

Schurr and Ozanne (1985) identified two dimensions of buyer-seller interactions: integrative and distributive. Integrative interaction is cooperative behavior directed toward satisfying the objectives of both buyer and seller while distributive behavior is directed toward self gain at the expense of the other party (Walton and McKersie 1965). Integrative behavior is more likely to result in goal achievement by both buyers and sellers, and therefore in more enduring buyer-seller relationships.

In the marketing channels literature, cooperation has been described as the firms' ability to collaborate and work together to achieve their respective goals (Stern and Reve 1980). The channel partnership perspective has been stressed in recent years (Bonoma 1984; Hlavacek and McCuistion 1983; McVey 1960; Reddy and Marvin 1986; Webster 1969). The well accepted view is that marketing channels represent an interdependent system where constituent members
provide mutual benefits or outcomes to one another (Anderson and Narus 1984, 1990; Cadotte and Stern 1979; Frazier 1983a, 1983b; Sethuraman, Anderson and Narus 1988; Stern and El-Ansary 1982).

"Partnering" is the establishment of exceptionally close relations between customers and suppliers (Stralkowski and Billon 1988). A partnership is a working relationship with a long term commitment, a sense of mutual cooperation, shared risk and benefits, and other qualities consistent with the concepts and theories of participatory decision making (Henderson 1990). Like any ongoing relationship, partnering depends on mutual interests, emotional commitment, positive nurturing, the capability to act and the willingness to adjust the relationship as events evolve (Stralkowski, Klemm, and Billon 1988).

Jackson (1985) refers to both an arm's length (transactional) relationship and a partnership relationship. The partnership style includes risk sharing, the need to view the relationship as a continuous exchange, and the need to have a mechanism to monitor and execute operations. It is the ultimate in cooperation between two firms. For a strategic alliance to succeed, complementarity is a primary element (Berg and Friedman 1980; Harrigan 1986; Gage 1986; Sethuraman, Anderson and Narus 1988).

When partners adopt a high level of purposeful cooperation to maintain a trade relationship over time they
are viewed as collaborating. It is a bilateral relationship with a mutual commitment to the future. A balanced power relationship is essential. Collaboration grows from the recognition of the interdependence of the trading partners and the need to decrease uncertainty inherent in any trade relationship (Salmond and Spekman 1986). The objective is a marriage in which both sides believe they are getting something out of the relationship (Davis 1989).

Porter (1985) referred to these relationships as the joint optimization of the supplier linkage. Varadarajan and Rajaratnam (1986) suggested other terms used for this relationship as collaboration, strategic partnership, teaming up, and networking. A variety of terms have been used including domesticated markets (Arndt 1979), long term buyer-seller relationships (Dwyer, Schurr and Oh 1987; Ford 1980), just-in-time relationships (Frazier, Spekman and O'Neal 1988), political economy framework (Stern and Reve 1980), interactive model of the industrial transaction (Johnston and McQuiston 1984), manufacturer-distributor relationships (Anderson and Narus 1984), buyer-seller interaction model (Hakansson and Wootz 1979), developer-adopter relationships (More 1986), channel relationship management (Ross 1985), strategic alliance (Spekman 1988b), reverse marketing (Leenders and Blenkhorn 1988), and value adding partnership (Johnston and Lawrence 1988). Rubin and Carter (1990) suggested that to avoid the legal implication
of a partnership the relationships should be referred to as the buyer-seller linkage. However, because the term partnering has been used by many manufacturing firms as well as their suppliers, the term buyer-seller partnership will be used here to denote the stable working relationship and more coordinated effort engaged in by buyers and sellers today.

Levels of Relationships

This section will discuss the levels of relationships at which firms can interact in a partnership. Although this study focuses on a partnership between a manufacturer and a supplier, it is important to understand that other relationships are possible.

Interorganizational exchanges can exist at a variety of levels. Horizontal relationships may exist between buyer firms, such as retailer cooperatives, voluntary chains, and buying groups (Hardy and McGrath 1987). Partnership agreements may also exist in a variety of forms between seller firms, such as strategic networks, competitive markets (Easton and Araujo 1986), strategic groups (Porter 1985), strategic alliances, consortia, joint ventures, and cross licensing (Bristor 1990).

Partnerships also may take place in a vertical type of relationship. Considerable work has been done in examining the manufacturer-distributor partnership. Manufacturers and
distributor firms are involved in fewer but significant working partnerships in which there exist better coordination of the marketing and technical activities that are essential to their mutual success in the marketplace (Anderson and Narus 1990). These types of relationships have received increased recognition in recent years (Frazier 1983a, Frazier and Sheth 1985; Stern and Reve 1980). Anderson and Narus (1990) defined this relationship as the extent to which there is mutual recognition and understanding that the success of each firm depends on the other. Each firm consequently takes actions to provide a coordinated effort focused on jointly satisfying the requirements of the customer marketplace. Building a working partnership has become a priority for many manufacturers because the role of industrial distributors has expanded in the U.S. economy (Narus and Anderson 1986).

There have been a few studies regarding the distributor-customer partnership. End users are showing an increased desire to concentrate purchases with fewer wholesaler-distributors who offer long term commitments (Arthur Andersen 1987).

There has been very little empirical research done on the manufacturer-supplier relationship. However, with the move toward total quality, there has been more interest on the part of firms to investigate these types of relationships. With the rise of just-in-time (JIT),
stockless ordering and manufacturing resources planning, it is clear that more cooperative modes of buyer-seller relationships are more appropriate (Spekman 1988b). The addition of JIT, early supplier involvement, and the push to total quality management in both the product and the process have encouraged buyers into searching for supplier partners who will share their quality and process goals.

Because supplier bases will be reduced, more buying firms will interface electronically with customers, make JIT deliveries, perform quality control at the source, and move facilities closer to the customer (Bartholomew 1984). Suppliers, in return will insist on a long term commitment, insight into customer planning horizons, and stability in terms of mixing production.

**Benefits of Partnership Agreements**

Throughout the literature, there have been a number of benefits of partnerships that have been identified. These benefits exist for both buyers and sellers in the partnerships.

A better relationship is the central ingredient of ongoing profitability and market leadership. Apart from the joint interest in averting losses, there is the possibility of mutual benefit (Fisher and Ury 1981; Lewicki and Litterer 1985). Advantages to these relationships include the reduction of the uncertainty of operation, reduction of
transactional costs, and the synergy of combining complementary operations (Arndt 1979).

Newman (1988) suggested that the cooperative approach is essential in eliminating the unnecessary costs associated with multiple sourcing and gaining the shared benefits of long term relationships with suppliers. With long term contracts, the supplier undertakes certain programs to enhance product quality, price, performance, timeliness of delivery, and other important elements of service.

Dwyer (1980) found that satisfaction is positively correlated to the channel member's level of autonomy and the perceived cooperation of firms. This level of satisfaction was further confirmed by Anderson and Narus (1984). Brown and Day (1981) determined that satisfaction is inversely related to conflict.

**Characteristics of Partnerships**

There have been a number of characteristics of partnerships that have been observed in the marketing literature. A review of these characteristics will suggest that they are common to all partnerships.

In most marketing channels research, the variables studied are dependence, influence, and conflict (Anderson and Narus 1984; Frazier 1983a; Heide and John 1988, 1990). However, in these new types of relationships, communication and trust are studied. Communication is the sharing of
meaningful and timely information between firms, while trust is the firm's belief that the other company will perform actions that result in a positive outcome for the firm (Anderson and Narus 1990).

Frazier (1983b) determined that high levels of cooperation at one point in time contribute to a relatively low need for influence. He found a use of indirect nonpressurized strategies when influence attempts are made in a cooperative relationship. Attributes of cooperative relationships identified by Landeros and Monczka (1989) are an alliance incorporating a credible commitment, an exchange of information, joint problem solving activities, and a supply pool of one or a few suppliers. Credible commitment is undertaken to support the harmonious affiliation to promote exchange of information and resources (Williamson 1985). Newman (1989) suggested that the contractual arrangement is often extended beyond the annual contract to three, five, or eight years, thus ensuring adequate supply. Continuity, or the bilateral expectation of future interaction is an important part of these relationships (Heide and John 1990).

Guiltinan, Rejab, and Rodgers (1980) showed that cooperation and coordination are high when interfirm communication is perceived to be effective in reducing uncertainty. Reddy and Marvin (1986) suggest that a key dimension of the manufacturer-distributor partnership is the
sharing and use of market information. Cooperation is also high when participative decision making is perceived to take place. Communication and conflict resolution are constructive resolutions: a win-win situation involving open and honest communication with a problem solving approach is the result. Dialogue and joint problem solving have replaced negotiation as a primary means of exchanging information (Spekman 1988b). Heide and John (1990) suggested that joint action between the participants is important in the maintenance of the relationship.

A preferred supplier pool is similar to vertical integration since the intent is to do business with one or a few preferred suppliers and not to switch them in the short term. The purpose of reducing suppliers is to improve the performance of the total supplier system rather than the competitive process. One maximizes bargaining power by concentrating the firm's purchases and thus achieving economies of scale that result in price discounts. Quality variation is reduced. However, a firm can only manage this if the number of suppliers decreases. The goal is to develop long term partnerships in which both parties to the exchange take place in and are responsible for the finished product.

If a long term close relationship is desirable, buyers look for suppliers who can support, commit, and contribute to mutually beneficial relationships. Buyers are sensitive
to the problem of selecting the wrong supplier, misplacing one's trust, and becoming complacent regarding the supplier's ability to deliver leading edge technology (Spekman 1988a).

The cornerstone to strategic partnerships is trust (Spekman 1988a). A number of researchers have emphasized the importance of trust and a common vision of the future in these relationships (Pruitt 1981; Stralkowski and Billon 1988; Stralkowski, Klemm, and Billon 1988).

Trust, commitment and information sharing cannot be reached with a large base of suppliers, so supplier selection is very important (Spekman 1988b). Some firms believe that loyalty must be rewarded and commitment encouraged. One way to ensure that is through greater uses of multiyear contracts and single sourcing.

Single Sourcing

Sourcing has been the subject of several research efforts. There have, however, been few empirical studies on single sourcing. Information regarding single sourcing is reviewed next.

Single sourcing of an item means the buying firm has chosen to purchase all of the requirements for that item from one supplier (Treleven 1987). It is recognized generally as a desirable component of a quality system. Sole sourcing, on the other hand, is the use of one source
because it is the only one that exists due to exclusive design, location, patent, etc.

Items were historically sole sourced due to geographical proximity, monopolies, proprietary products, inflexible design specifications and the absence of alternative sources (Bartholomew 1984). As transportation systems improved, purchases were spread among vendors to decrease the risk of supply disruption (Treleven 1987). The allocation of orders among suppliers has been the accepted practice among manufacturers over the past several decades.

Western sourcing strategies are openly adversarial in nature, relying on multiple sources to provide an insurance policy against supply interruptions and to allow the buyer to develop power through competitive pressure. Power struggles are the accepted mechanism whereby buyer and supplier try to control their respective profit levels (Ramsay 1990).

With the advent of the emphasis on TQM (Total Quality Management), firms have begun to pay increasing attention to a variety of new techniques. Single sourcing is a Japanese technique. Deming (1982) the proponent of quality systems, and as some people have termed him, the father of Japanese strategy, urged manufacturers to decrease vendors, and ideally to single source purchases. He claimed that a second source for an item increased the aggregate cost of materials.
Single sourcing was prompted by Just-In-Time (JIT) manufacturing and is a necessary part of JIT implementation. A move to single source or at least a reduced supplier base is a necessary requirement for JIT implementation (Newman 1988). There is a need to decrease the number of suppliers while emphasizing the quality aspects. A smaller base gives leverage with a chosen few suppliers and remains an important purchasing strategy (Purchasing, 1989a). If one engages in long term single source relations it is possible to achieve reduced costs for the supplier, lower prices for the buyer, and improved product quality (Treleven 1987). Today, more and more companies are emphasizing the cost of ownership rather than unit price or unit cost.

When using multiple sourcing, costs are masked in the supplier's prices. Since defects are found after the product is produced, the true cost of defects and rework are high (Newman 1988). Other costs associated with multiple sourcing are the costs of tooling, jigs, fixtures, patterns, and molds. Additional costs are increased workload and routine paperwork.

By moving toward single sourcing, a firm's goal is to reduce the number of vendors with which it deals. The ultimate goal is to single source as many items as practical and to source multiple items from the same vendor (Treleven 1987). Today, the emphasis on single sourcing is an emphasis on mutual cost effectiveness, including quality considerations.
An advantage to single sourcing is elimination of adversarial relations so improved communication, improved product quality, lower price, less rework and fewer returns result (Treleven 1987). The relationship should be viewed not as dependance but as dependability.

Several researchers have, however, warned against single sourcing (Ramsay 1990; Newman 1989). Newman cautions against source dependency and recommends dual sourcing.

Other than conceptual studies, there has been little empirical work regarding single sourcing. Segal (1989) examined the use of sourcing as a segmentation variable. He determined that price related vendor attributes were important discriminators between firms which decide to single or multiple source.

With more and more firms adopting total quality management programs, vendor reduction programs are increasing. Indeed many manufacturers are moving to single sourcing of items. As indicated by Segal (1989), the degree of interdependence, complementarity, quality, and intensity in buyer-seller relationships are greatly influenced by the use of single versus multiple sourcing in industrial purchasing. With firms shifting towards a strategy of single sourcing it is important to understand some characteristics that may affect a firm's sourcing practices and thus affect the efficiency of the firm.
Purchasing Manager as Unit of Analysis

The purchasing manager as the unit of analysis has been researched in many studies. A review of these studies will suggest that focus on the purchasing manager in this study is appropriate.

In most industrial purchases, it is unusual for only one person to be the sole decider in the decision process (Walsh 1961). The role of the buying center has been emphasized recently in research (Bonoma 1982; Johnston and Bonoma 1981). A buying center is all of those involved in the buying decision (Wind 1967).

Why some members of the buying center exert more influence than others has been investigated on a regular basis. Studies have found varying influence in levels of responsibility in the firm (Bellizi 1979, 1981; Bellizi and McVey 1978; Bellizi and Walter 1980; Bonoma 1982; Buckner 1967; Cooley, Jackson and Ostrom 1977; Duncan 1965; Erickson and Gross 1980; Grashof and Thomas 1976; Jackson, Keith and Burdick 1984; Kohli 1989; Kohli and Zaltman 1988; Laczniak 1979; McMillan 1973; Naumann, Lincoln and McWilliams 1984; Robinson, Paris, and Wind 1967; Spekman and Stern 1979; Strauss 1962; Thomas 1982; Weigand 1966; Wind 1971, 1978; Woodside, Karpati, and Kakarigi 1978; Zaltman and Bonoma 1977). Influence can vary across functions, product groups, stages in the decision process, and buying task.
Approximately 50% to 60% of the revenues of a company are spent on purchases of material and services (Naumann and Reck 1982). The effectiveness of the purchasing function therefore has a significant impact on the profits of the firm.

The spectrum of concerns of the purchasing operation goes beyond simply buying products. Concerns cover all aspects including the producer of the product (supplier), the product itself, the process by which it is produced, and the price paid for the product (Newman 1988). Bonoma and Johnston (1978) identified purchasing as the final authority in 24-40% of all purchases. Other fields such as materials management suggest that individual purchasing managers occupy an important role in the industrial buying process (Michman and Sibley 1980).

**Purchasing's Role in Supplier Selection**

A variety of studies have determined that the influence of the purchasing manager increases as the situation changes from a new buy to a modified rebuy or a straight rebuy (Berkowitz 1986; Cooley, Jackson, and Ostrom 1977; Naumann, Lincoln, and McWilliams 1984; Pingry 1974, 1984; Weigand 1966). Supplier selection is purchasing's most important responsibility (Dobler, Lee, and Burt 1984; England, Leenders, and Fearon 1989; Hahn, Watts and Kim 1990; Leenders 1989; Soukup 1987). Supplier selection is critical
to the firm to ensure long term viability as it can trim operating costs and increase profits. It is important to the marketing success of the firm and has an indirect impact on the marketing mix and ultimate customer satisfaction (Thompson 1990).

Several studies have determined that the purchasing manager dominates the supplier selection decision (Cooley, Jackson and Ostrom 1977; Hutt and Speh 1981; Jackson, Keith and Burdick 1984). Bellizi and Walter (1980) suggested that the purchasing manager is most influential in the search and qualification of sources, the gathering of information and the selection of routines. Berkowitz (1986) found that purchasing was dominant in having the final authority for selecting suppliers and implementing all procedures connected with securing the product.

Purchasing managers are interpersonally involved with a variety of constituents (Chonko 1982). Adams (1976) suggested that a purchasing manager is a boundary role person. A boundary person has responsibility for determining with whom to begin the exchange (Frazier 1983b). Boundary role persons are informal gate keepers limiting information to non-boundary role organizational members (Krapfel 1985). They play an important role in vendor choice.

As a boundary role person, the buyer is the representative of the firm. He is responsible for meeting
the requirements of the firm and must be acceptable to the firm when he performs the buying function (Clopton 1984). He must spend time interacting with organizations and individuals outside the firm on the firm's behalf.

Therefore the purchasing manager is the coordinator or orchestrator of partnering (Stralkowski, Klemm and Billon 1988). In the implementation of partnering, the purchasing manager's role is to manage and coordinate the ongoing exchange relationship (Frazier 1983b). The purchasing manager directly affects the ability of the firm to compete through its impact on quality, cost, technology and supplier responsiveness.

**Personal Characteristics of Purchasing Managers**

Industrial buying decisions have been described as the result of the objective, rational evaluation of available alternatives by well trained professional buyers whose goal is to make optimally favorable buying arrangements for the firm (Puto, Patton and King 1985). Emerging research in behavior decision theory suggests nonobjective psychological factors also contribute to the outcome of industrial buying decisions (Cardozo 1968; Feldman and Cardozo 1969; Ozanne and Churchill 1968; Peters and Venkatesan 1973; Robinson, Paris, and Wind 1967; Sheth 1977; Webster 1965).

Recent investigations indicate industrial product buyers may be affected by some of the same individual
characteristics as the buyers of consumer goods (Puto 1987; Puto, Patton and King 1987; Qualls and Puto 1989; Webster 1990). Personal factors can influence the purchasing manager regarding the need for the exchange relationship, content and strength of the relationship, the extent of the search, and the level of deserved rewards (Frazier 1983b).

Buyers are reluctant to abandon old habits (Spekman 1988b). They are slow to change and reluctant to shed past perceptions and attitudes. Setting up collaborative relationships with select suppliers is not without risk.

The adversarial model still predominates, as tradition is hard to break (Spekman 1988a). Purchasing managers are accustomed to using multiple sourcing as there is risk to placing all one's eggs in one basket. A problem for the firm is how to manage the transition in relationships from adversarial to cooperative. Many purchasing managers have difficulties during the transition and have jeopardized a number of existing close relationships (Spekman 1988a).

Although a cooperative relationship contributes to higher profits and greater competitive advantage for the firm, for the purchasing manager, risks remain and doubts persist. They could anticipate a loss of flexibility and increased dependence due to decreasing costs, increasing quality and improving delivery.

The purchasing manager thus plays an important role in the buyer-seller partnership. Because some purchasing
managers may still cling to the old adversarial viewpoint, it is important to assess characteristics of purchasing managers that may affect their attitudes toward sourcing.

Trust

The literature relating to trust will be divided into three groups: studies on trust, trust in the marketing literature, and trust in relationships. These are reviewed below.

Studies on Trust

In the social psychology field, the importance of trust in interpersonal dyads has been emphasized by a variety of researchers (Gibb 1961; Pruitt 1981; Rogers 1961; Rotter 1967, 1971, 1980a, 1980b; Schlenker, Helm, and Tedeschi 1973). Deutsch (1958) is generally viewed as the pioneer of research on the variable of trust. Rotter (1967; 1971; 1980a; 1980b), however, has conducted most of the empirical studies.

In social learning theory, Rotter (1967) defined interpersonal trust as an expectancy that other people can be believed or relied upon. Trust is the generalized expectancy held by individuals that a party's word or promise is reliable and that a party will fulfill his/her obligations in an exchange relationship (Blau 1964; Rotter 1967). People's expectancies for a particular reward in a
The given situation will be determined not only by past experience in a given situation but by the experiences they generalize from other sets that they perceive as similar (Rotter 1980a). As a result, people develop a relatively stable personality characteristic of trusting or distrusting others. If one has expectancies that others' communications can be relied on and are generalized from one social agent to another, then the individual will build up a generalized expectancy for trust of others or trust of generalized others (Rotter 1980b). Trust is believing others in the absence of clear-cut reasons to disbelieve.

Rotter (1967) developed the Interpersonal Trust Scale to measure individual differences in interpersonal trust. Rotter's designation of High and Low Trusters is a generalized expectancy of trust in novel situations and is a characteristic of people in the aggregate. Several researchers (Larzelere and Huston 1980; Rempel and Holmes 1986) have developed dyadic trust scales which imply two individuals in a dyadic relationship. This, however, is a unidimensional measure in comparison with Rotter's generalized trust which is the generalized expectancy that the word, the promise, the verbal or written statement of another individual or group can be relied upon.

In the social psychology field, researchers have examined trust with a variety of other variables such as source credibility (Giffin 1967), locus of control (Hamsher,
Geller, and Rotter 1968), self disclosure (Vondracek and Marshall 1971; MacDonald, Kessel, and Fuller 1972), dependence (Rotter 1971), defensiveness (Gibb 1961), and cooperation (Schlenker, Helm, and Tedeschi 1973). Of particular importance is the relationship between trust and cooperative relationships.

Rogers (1961) determined that the development of trust is a crucial factor and necessary continuing element in a relationship. Gibb (1964) posited that high trusters will accept interdependence because of their confidence that others will control their behavior in accordance with agreements. They therefore will have less of a need to impose controls on others. He suggested that underlying problems are more likely to be identified and examined and solutions more likely to be appropriate, creative, and long range.

Wright and Kirmani (1977) found low trusters perceive others as distrusting. Gibb (1964) suggested that one who does not trust others will conceal or distort relevant information. He will avoid or will disguise facts, ideas, conclusions, and feelings he believes will increase his exposure to others. He also will be suspicious of their views and not receptive to their proposals.

Surprisingly, trust has received scant attention in the management and organizational behavior literature. Zand (1972) determined that higher levels of trust are associated
with better goal clarification, greater exchange of information, greater problem solving search, and increased commitment to implement agreements. Zand concluded that trust is a major determinant of managerial problem solving efficiency. In organizations, one can conceptualize trust as behavior that conveys appropriate information, permits mutuality of influence, encourages self control, and avoids abuse of the vulnerability of others.

Sullivan, Peterson, Kameda, and Shimada (1981) investigated trust in Japanese/American joint ventures. They compared the Japanese and American use of trust and determined trust is related to the way contracts are handled. The authors posited that mutual trust is important in the development of close personal relationships. Because Japanese managers use a cooperative approach, the assumption by the Japanese is that if the parties trust one another, there will be a way they can resolve differences.

Sullivan and Peterson (1982) found that if two parties trust each other, they can work out difficulties. They suggested that trust leads to further trust in future transactions.

Trust in Marketing Literature

Trust has been examined to some degree in marketing channels theory (Frazier 1983b; Gaski 1984, 1986; Hunt and Nevin 1974; John 1984). Trust has been primarily viewed as
an aspect of expert and referent power, cooperation, and the reliability of threats and promises.

Consumer research has paid scant attention to the influence of trust on cooperation and agreement. Trust has only recently been brought into buyer-seller interaction (Crosby, Evans, and Cowles 1990; Schurr and Ozanne 1985; Dwyer, Schurr, and Oh 1987). Crosby, Evans, and Cowles (1990) suggested that the role of trust in marketing is important, particularly in relational contexts. Schurr and Ozanne (1985) found high trust caused a more favorable attitude toward the current supplier and a tendency towards source loyalty than low trust. Low trust stimulated a less favorable attitude and therefore less communication. Dwyer, Schurr, and Oh (1987) found that trust leads to commitment in ongoing relationships. They suggested that in a dyadic process, trust is pivotal, a "pivotal specific expectancy."

What little attention trust has received in empirical marketing studies has been primarily directed at determining the individual customer's trust of the salesperson or suggesting to the salesperson how to gain customer trust. Swan, Trawick and Silva (1985) and Swan and Nolan (1985) found building trust in buyer/seller relationships is beneficial to a long term selling relationship. Swan, Trawick and Silva (1985) also determined that trust
increases as time goes on and is based on salesperson characteristics.

**Trust in Relationships**

The importance of trust in a relational context has been determined in a variety of fields. Rotter (1980a) posited that trust is an important variable affecting human relationships at all levels. Several researchers have suggested that high trust is related to integrative behavior (Kimmel, Pruitt, Magenau, Konar-Goldband, and Carnevale (1980); Pruitt 1981; Zand 1972). Trust leads to constructive dialogue and cooperative problem solving (Pruitt 1981).

Zand (1972) found trust facilitates interpersonal acceptance and openness of expression. Trust is particularly important in relational contexts where individuals seek obligatory behavior on the part of the partner so a degree of certainty is attached to future rewards (Millar and Rogers 1987).

The industrial marketing literature has long emphasized the dyadic interactions involved in industrial buying behavior. In theories of dyadic interaction, trust is an essential ingredient for cooperation and agreement (Blau 1964; Deutsch 1958, 1973; Pruitt 1981). Dwyer, Schurr and Oh (1987) suggested that trust is an important concept in understanding expectations for cooperation in a relational
contract. They found that trust leads to commitment in ongoing relationships. Crosby, Evans, and Cowles (1990) included trust as one dimension in their model of relationship quality.

The need for openness and trust in a relationship is abundantly clear (Dion and Banting 1988; Rubin and Carter 1990). High trusters are more cooperative in a relationship (Pruitt 1981). Schlenker, Helm and Tedeschi (1973) found that in a communication exchange the trust variable had additive effects in degree of reliance placed on unconditional promises. Mistrust, on the other hand, arouses defensive behavior such as evasive communication (Schurr and Ozanne 1985).

Kelley and Stahelski (1970) identified the two personality types of cooperative and competitive behavior. Each of these types behaves towards and perceives others differently. Cooperative people view the world as composed of both cooperative and competitive people and adjust their behavior to fit their view of the other. Competitive people, however, view others as competitive only and behave only in a competitive manner. They posited that high trusters may view people as either trusting or untrusting and respond differently to variations in actions. Low trusters may view others exclusively as untrustworthy and respond only competitively towards them.
The essence of trust is that some uncertainty exists regarding future outcomes (Crosby, Evans, and Cowles 1990; Frost, Stimpson, and Maugan 1978; Pruitt 1981). This is, of course, important in the buyer-seller relationship. It is posited here that a purchasing manager, because he faces uncertainty for himself as well as for the firm, should be a High Truster in order to enter into ongoing buyer-seller partnerships.

Machiavellianism

Several researchers have pursued studies involving Machiavellianism. Most of these studies have been in the field of sociology, although several have been conducted in marketing. A review of the primary studies follows.

Since Nicollo Machiavelli wrote The Prince in 1532, the trait of Machiavellianism has been associated with the characteristics of deception, manipulation, persuasion, and opportunism (Chonko 1982). In general, the trait has been perceived as negative. The term Machiavellianism has been used to describe a person who views and manipulates others for his own purposes (Maraldo, Fleachmeier, Johnston, Mayer, Peter, Reitan, and Russell 1976; Vleeming 1979). Calhoon (1969, p. 211) provided a twentieth century definition as "one who employs aggressive, manipulative, exploiting, and devious moves in order to achieve personal and organization objectives."
The Machiavellian dimension in personality was first investigated by Christie and Geis (1970). They developed several measurement instruments that determine how much a person believes others can be manipulated. They studied individuals' personal beliefs regarding characteristics of leaders. They observed, as characteristics of these leaders, a lack of affect in interpersonal relationships, a lack of concern with conventional morality, a lack of gross psychopathology, and a lack of ideological commitment. They determined that these were characteristics of a manipulative leadership style and thus devised the Machiavellian scale. Individuals were identified as either High Machs or Low Machs. Vleeming (1979) suggested that a High Mach expresses cool detachment while a Low Mach expresses high involvement with people. On the Mach IV scale, High Machs are individuals who describe themselves as telling others what they want to hear, as dishonest, with little regard for conventional morality, as flattering important people, and as not working very hard unless forced to do so (Solar and Bruehl 1971).

Christie and Geis (1970, p. 312) concluded that "High Machs manipulate more, win more, are persuaded less, persuade others more, and otherwise differ significantly from Low Machs as predicted in situations in which subjects interact face to face with others, when the situations provide latitude for improvisation and the subject must
initiate responses as he can or will, and in situations in which affective involvement with details irrelevant to winning distracts Low Machs.

Although Machiavellianism has been connected with manipulation, it has also been associated with opportunism (Mayer, Peter, Reitan, and Russell 1976; Vleeming 1979). Calhoon (1969, p. 211) provided a twentieth century definition as "one who employs aggressive, manipulative, exploiting, and devious moves in order to achieve personal and organization objectives."

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Although Machiavellianism has been connected with manipulation, it has also been associated with opportune success in the field and have reported mixed findings regarding Machiavellianism and performance.

Turnbull (1976) studied sales success and Machiavellianism. He posited that High Machs would show a tendency to exploit situations and others for self gain. However, his results demonstrated no effect on sales success.

Because purchasing managers' performance depends on the ability to bargain, Chonko (1982) suggested that purchasing managers may be more Machiavellian than others. He found that purchasing managers are high in Machiavellian
orientation relative to other occupations but consistent with corporate employees as a group. He concluded that Machiavellianism may be desirable in purchasing managers, if not carried to extremes.

Hunt and Chonko (1984) examined whether Machiavellianism in terms of manipulative and unethical characteristics were represented in marketing by surveying the American Marketing Association membership. Although marketing has its own share of High Machs, they found that Machiavellianism is unrelated to success in marketing. Dion and Banting (1988) also concluded that Machiavellianism of industrial buyers is negatively linked to purchasing performance, in contrast to Chonko (1982).

Although there have been mixed findings in marketing regarding Machiavellianism and success, it is posited here that Machiavellianism is the antithesis of what is desirable in ongoing, buyer-seller partnerships. Lamden and Loor (1975) found that High Machiavellianism is negatively correlated with trust. Provan and Skinner (1989) suggested that by engaging in opportunistic behavior an organization can influence decisions of other organizations in way that favor its own needs. Thus, if a purchasing manager is successful in the new buyer-seller relationships, he should be low in Machiavellianism.
Negotiation Style

Most studies of negotiation are found in other fields such as social psychology and organizational behavior (Pruitt 1981; Pruitt and Lewis 1975; Raiffa 1982; Rubin and Brown 1975; Schelling 1960; Young 1975). Clopton (1984) suggested that negotiation is a key aspect of buying behavior in organizations while Arndt (1979) said negotiation is a fundamental responsibility of marketing. Negotiation is the process of reviewing, planning, and analyzing used by two parties to reach acceptable agreements or compromises (Rubin and Carter 1990).

In marketing, most studies have looked at aspects of buyer-seller negotiations (Clopton 1984; Dion and Banting 1988; Dwyer 1984; Dwyer and Walker 1981; Johnston and Bonoma 1984; Mathews, Wilson, Monoky 1972; Neslin and Greenhalgh 1983; Pennington 1968; Schurr and Ozanne 1985). Most of these have been of a transactional nature in a specific buyer-seller interaction.

There is a need for cooperative, collaborative negotiations in ongoing buyer-seller relationships (Arndt 1979; Clopton 1984; Dwyer, Schurr, and Oh 1987; Johnston and Bonoma 1977; Rubin and Carter 1990). Buyers and sellers, as boundary spanners, are key links in communication between firms (Clopton 1984). Both buyer and seller are expected to obtain outcomes favorable to their own firm. Therefore the goals of buyer and seller are often in conflict.
Schurr and Ozanne (1985) suggested that negotiation by itself doesn't lead to enduring relationships. Although it is possible for buyers and sellers to bargain over terms to what is essentially a discrete construct, a relationship seems unlikely to form without bilateral communication of wants, issues, inputs, and priorities.

In negotiation, cooperative versus competitive intentions have been found to be linked to satisfactory problem resolution (Evans and Beltramini 1987). Pruitt (1981) identified competitive (win-lose) and coordinative (win-win) negotiation styles. In a coordinative style, the individual uses a problem solving approach and shows high trust and cooperation (Clopton 1984; Pruitt 1981).

Pruitt and Lewis (1977) suggested that competitive bargaining behavior stems from a zero-sum or win-lose orientation to negotiation. The negotiator maintains high limits for negotiation outcome and uses inflexible behavior aimed at forcing concessions from others. In fact, Karrass (1974; 1970) suggests that negotiators should conceal information from their negotiating partners and maintain secrecy.

Rubin and Carter (1990) demonstrated the general superiority of cooperative negotiation from the standpoint of overall cost reduction. If two parties negotiate cooperatively, with full disclosure of information to
minimize costs born by the buyer-seller linkage, a contract that ultimately benefits both firms will result.

Buyers favor openness and honesty. Dwyer, Schurr, and Oh (1987) suggested that intimate disclosure must be reciprocated. A relationship is unlikely to form without bilateral communication of wants, issues, inputs, and priorities. They posited communication and bargaining as subprocesses for a deepening dependence in the relationship development process.

Rubin and Carter (1990) suggested that in negotiation, participants position themselves as partners and want to maximize their joint benefit. Both sides must win for a long term relationship (Holmes 1982).

Perdue, Day, and Michaels (1986) used Thomas' (1976) typology of negotiating style. Thomas identified five styles of negotiation behavior: collaborative, competitive, sharing, avoidance, and accommodation. Perdue, et al (1986) found the collaborative style dominated others. They also determined that buyers perceive a collaborative style as more consistent with their own negotiation behavior. Also, they found that only the collaborative, competitive, and sharing styles were relevant among purchasing managers.

Coordinative behavior has become the norm. Dion and Banting (1988), found support for the collaborative view among purchasing managers. In the collaborative style, the buyer attempts to fully satisfy his/her own concerns and the
concerns of the seller. This has been described as integrative problem solving (Schurr and Ozanne 1985). The buyer's objective is to maximize the joint gain of both parties. Competitive behavior, on the other hand, reduces the chances of the buyer and seller reaching mutually beneficial or integrative agreements (Clopton 1984).

Cooperation, however, entails an exchange of information, sometimes confidential, between buyer and seller. If two parties can negotiate cooperatively with full disclosure of information the result will be a contract that ultimately benefits both firms (Rubin and Carter 1990).

As demonstrated by Perdue, Day, and Michaels (1986) as well as Dion and Banting (1988), the collaborative style is prevalent among purchasing managers today. It is posited here that the collaborative negotiation style is extremely important in ongoing buyer-seller relationships. It is particularly important that the purchasing manager in a buyer-seller partnership have a collaborative negotiation style.

Summary of Literature Review

More and more firms today are recognizing the growing importance of buyer-seller partnerships. Several presentations at the 1990 National Association of Purchasing Management (NAPM) Conference addressed the emergence of these new relationships (Kierdorf 1990; Leavitt 1990;
Scheuing and Hagstrand 1990; Stainbrook 1990; Weissman 1990). In addition, the purchasing literature has recognized the need for a change from an adversarial approach in a buyer-seller relationship to a partnership approach (Bartholomew 1984; Dobler, Lee, and Burt 1984; Hahn, Watts, and Kim 1990; Holmes 1982; Landeros and Monczka 1989; Newman 1988; 1989; Pingry 1984; Rubin and Carter 1990; Treleven 1987).

The strategic role of purchasing in the buyer-seller relationship is important. Scheuing and Hagstrand (1990, p. 42) suggested that a "new breed of purchasing professional must proactively manage the increasingly important procurement function." It is important, therefore, for the purchasing manager to make the transition from the traditional view of suppliers as adversaries to that of viewing them as team members (Weissman 1990).

Because buyer-seller relationships come in a variety of forms, a simpler way of characterizing the relationship is important. Single sourcing is generally recognized as a desirable component of a quality system. As indicated by Scheuing and Hagstrand (1990, p. 42), firms are recognizing "the futility of multiple sourcing and opting strategically for single source commitments instead."

Researchers invariably refer to the need in partnerships for openness and honesty (Scheuing and
Hagstrand 1990), as well as mutual trust, cooperation, commitment, and teamwork (Weissman 1990). Therefore, the variables of generalized trust, Machiavellianism, and negotiation style are important characteristics to measure.


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CHAPTER THREE

RESEARCH DESIGN

This chapter includes information regarding the research design. The discussion of the research hypotheses, research design, and analysis of data comprise the major sections of this chapter.

Research Hypotheses

This study was conducted to achieve the specific objectives stated in chapter one. Specifically addressed were 1) whether there are personal characteristics of purchasing managers that lead them to make suboptimal decisions regarding buyer-seller partnerships and 2) whether these characteristics, if identified, can discriminate between purchasing managers who have a preference for single sourcing and those who have a preference for multiple sourcing. The format of this section will be a list of 1) the research questions, 2) the hypothesis(es) drawn from the question, and 3) the primary studies supporting the hypothesis(es). Six hypotheses were investigated in the study.

Research Question 1:
Do Purchasing Managers who have a high level of generalized trust engage more frequently in single sourcing?
H1: Purchasing Managers who have a high level of generalized trust, i.e. a High Truster, will demonstrate a preference for single sourcing rather than multiple sourcing.

As indicated in chapter two, the need for openness and trust in a relationship is clear (Rubin and Carter 1990). High Trusters tend to be more cooperative in a relationship (Pruitt 1981). Buyer-seller ongoing relationships require both participants to have trust in the other party. Crosby, Evans, and Cowles (1990) suggested that the role of trust in marketing is important, particularly in relational contexts.

Schurr and Ozanne (1985) found high trust caused a more favorable attitude toward the current supplier and a higher preference towards source loyalty than low trust. Low trust stimulated a less favorable attitude and therefore less communication. Dwyer, Schurr, and Oh (1987) found that trust leads to commitment in ongoing relationships. They suggested that in a dyadic process, trust is pivotal, a "pivotal specific expectancy."

Dion and Banting (1988) also suggested a long term relationship requires trust. It was therefore posited that a purchasing manager who engages in single sourcing will be a High Truster.

This hypothesis will help determine whether, in fact, a purchasing manager's level of generalized trust does have an influence on sourcing preference. It will verify whether or not being a High Truster improves a purchasing manager's
preference to single source and therefore to enter buyer-seller partnerships. Confirmation of the hypothesis will determine whether generalized trust is a salient variable to study in buyer-seller partnerships.

Research Question 2:
Do Purchasing Managers who exhibit Machiavellianism tend to engage more frequently in multiple sourcing?

H₂: Purchasing Managers who have a low level of Machiavellianism, i.e. a Low Mach, will have a preference for single sourcing rather than multiple sourcing.

Machiavellianism has been used to describe an individual who manipulates others and acts opportunistically. Although there have been mixed findings in marketing regarding Machiavellianism and success (Chonko 1982; Dion and Banting 1988; Hunt and Chonko 1984), it was posited here that Machiavellianism is the antithesis of what is required in an ongoing relationship. Purchasing managers who single source should be less manipulative and more cooperative. Thus, they should be classified as Low Machs or Low Machiavellians, (Christie and Geis 1970) indicating a low level of manipulative behavior.

This hypothesis will help determine whether a purchasing manager's Machiavellian orientation can be associated with sourcing preference. It will verify whether
being a Low Mach improves a purchasing manager's preference to single source and thus to enter buyer-seller partnerships. Confirmation of the hypothesis will determine whether in fact Machiavellianism is an important variable to study in buyer-seller partnerships.

**Research Question 3:**

Do Purchasing Managers who engage in single sourcing have a specific style of negotiation behavior?

**H₃ₐ:** Purchasing Managers who demonstrate a collaborative negotiation style will have a preference for single sourcing rather than multiple sourcing.

**H₃₉:** Purchasing Managers who demonstrate a competitive negotiation style will have a preference for multiple sourcing rather than single sourcing.

**H₃c:** Purchasing Managers in general will demonstrate a collaborative style more than any other style.

**H₃d:** Few of the Purchasing Managers will demonstrate either an accommodative or avoidance style.

Perdue, Day, and Michaels (1986) as well as Dion and Banting (1988) determined that the collaborative negotiation style is prevalent among purchasing managers. Because the collaborative style results in integrative problem solving, it is integral in buyer-seller relationships.

Besides the collaborative style, there were four additional negotiation styles (competitive, sharing, accommodating, and avoidance) in the Perdue, Day, and
Michaels (1986) classification. Each of these, however, is suboptimal behavior for a truly integrative type of problem solving required for a buyer-seller partnership and thus are inferior to the collaborative style. In addition, Perdue, et al determined that only the collaborative, competitive, and sharing styles were relevant among purchasing managers.

These four hypotheses will determine whether a purchasing manager's negotiation style can be identified with a sourcing preference. Confirmation of these hypotheses will suggest the negotiation style which is associated with the purchasing manager's preference to single source and therefore to enter buyer-seller partnerships. It will also reveal whether, in fact, negotiation style is a salient variable in studies of buyer-seller partnerships.

Research Design

This section includes discussions of 1) the pilot study, 2) the sample, 3) the study procedure, and 4) the data gathering procedure.

Pilot Study

Personal interviews were conducted with six purchasing managers in the Dallas area to determine the efficiency of the questionnaire in generating the desired data and also to verify questions regarding single sourcing. Using input
from the interviews, a pilot study involving the mailing of questionnaires was conducted utilizing 100 members of the Purchasing Management Association of Dallas. The local chapter has over 800 members in a variety of industries. Based on responses to the initial mailing, the questionnaire was further refined by eliminating some of the scale items for sourcing preference and asking some additional questions, i.e., whether or not the purchasing manager had been certified.

Sample

The subjects utilized in the primary study were the membership of the National Association of Purchasing Management, whose total membership is in excess of 37,000. In this study, 2000 Purchasing Managers were drawn from three SIC codes. These industries include: Chemical and allied products (SIC 28), Electrical and electronic equipment (SIC 36), and Transportation equipment (SIC 37). These specific industries were selected because they were known to have engaged in single sourcing, based on the pilot study and interviews. In addition, all three industries have a high percentage of firms in large establishments.

The names of the purchasing managers were obtained with the consent of the National Association of Purchasing Management (NAPM). A proposal for the study was submitted to the NAPM in order to obtain the required mailing list.
To assess the representativeness of the sample to the population of interest (industrial buyers), demographics of the respondents were compared to the National Association of Purchasing Management membership (Perdue, Day, and Michaels 1986). Chi square analyses was conducted on each of the variables to compare the sample with the membership.

**Study Procedure**

A self-administered questionnaire was mailed to the purchasing managers. In order to obtain an adequate response rate, a personalized letter indicating the significance of participation was enclosed with each questionnaire. A copy of each of these appears in the appendix to this chapter.

A self-addressed, stamped envelope was provided as suggested by Jobber (1986). Ten days after the initial mailing a second copy of the questionnaire was sent (Heberlein and Baumgartner 1981).

Nonresponse bias was assessed by comparing responses received for the first mail-out with those from the second mail-out. Armstrong and Overton (1977) suggested comparing late responses to those received earlier because late respondents are similar to non-respondents.
Data Gathering Procedure

The survey questionnaire was designed to assess generalized trust, Machiavellian orientation, and negotiation style of the purchasing manager. These variables were measured using scales that have been previously used in marketing and management literature. In addition, questions regarding attitude toward single sourcing and demographic characteristics were asked. Attitude toward single sourcing was measured by scales developed through interviews with purchasing managers as well as the pilot study. General demographic data, including education, age, sex, and marital status were measured with multiple choice questions.

The following measures were used:

1. **Generalized Trust:** Trust was measured using a twelve item scale that is a shortened, adapted version of Rotter's Interpersonal Trust Scale (Rotter 1967). Rotter's interpersonal trust measure is an additive test and has an internal consistency of .76 with high test-retest reliability. Rotter's scale was modified (Chun and Campbell 1974; Corazzini 1977; Kaplan 1973) and found to contain four dimensions (Chun and Campbell 1974). These dimensions were identified as political cynicism, interpersonal exploitation, societal hypocrisy, and reliable role-performance. Research by Sullivan (Sullivan and Peterson 1982; Sullivan, Peterson, Kameda, and Shimada 1981) has
demonstrated the test's adequate reliability among business managers.

On the generalized trust scale and all other scale items, respondents were asked to respond in a seven point Likert format where 7=Strongly Agree, 6=Agree, 5=Slightly Agree, 4=Neither Agree Nor Disagree, 3=Slightly Disagree, 2=Disagree, and 1=Strongly Disagree. Responses to the items worded in the "untrustful" direction were reversed in the scoring procedure so that higher scores on the scale were indicative of high trust. The theoretical neutral point was therefore 48 (4.0 x 12 items), while the maximum score was 84 (7.0 x 12 items) and the minimum score was be 12 (1.0 x 12 items).

2. Machiavellianism: Christie and Geis' (1970) Mach IV scale was used to assess the Machiavellian orientation of the Purchasing Manager. The Mach IV scale consists of twenty Likert type items derived from *The Prince* and *The Discourse*. The scale was designed to determine an individual's strategy for dealing with others. It is the most frequently used scale for manipulative behavior with acceptable reported reliability coefficients (Christie and Geis 1970; Chonko 1982; Hunt and Chonko 1984; Vleeming 1979).

Each purchasing manager was asked to indicate the extent of agreement or disagreement with each of twenty scale items. As suggested by Christie and Geis (1970), ten
of the items were phrased positively while ten were phrased negatively. All items were scored on a seven point Likert scale ranging from Strongly Agree to Strongly Disagree.

Following Christie and Geis (1970), a constant of 20 was added to all scores. Therefore the total score at the theoretical neutral point was 100 (4.0 x 20 items + 20). The maximum score was 160 (7.0 x 20 items + 20) and the minimum score was 40 (1.0 x 20 items + 20).

3. Negotiation Style: Negotiation style was measured by a twenty eight item inventory developed by Rahim (1983) and previously used with purchasing managers. As suggested by Perdue, Day, and Michaels (1986), the items were modified to fit the industrial buyer-seller context.

The inventory contains five multi-item measures which assess behaviors consistent with the Thomas (1976) typology. These five styles are collaborative, competitive, sharing, accommodative, and avoidant. The five negotiation styles as well as the number of scale items per style are discussed below according to Perdue, Day, and Michaels (1986):

a. Collaborative (seven items): The buyer attempts to fully satisfy both his own concerns and those of the seller. It is problem solving style in which the buyer's main objective is to maximize the joint gain of both parties.

b. Competitive (five items): The buyer attempts to fully satisfy his own concerns at the expense of the seller's concerns. It is a "win-lose" style in which the
buyer attempts to enhance his own position relative to the seller.

c. Sharing (four items): The buyer settles for the partial satisfaction of both parties' concerns. It is a compromise style in which the buyer "splits the difference" with the seller.

d. Accommodative (six items): The buyer attempts to fully satisfy the concerns of the seller at the expense of his own concerns. This is a self-sacrificing style in which the buyer seeks peaceful coexistence with the seller.

e. Avoidant (six items): The buyer is indifferent to the concerns of either party. This is a withdrawal style in which the buyer avoids a confrontation with the seller.

Respondents were asked to recall their past negotiations with sales representatives and to indicate their level of agreement with each of the statements in the inventory. As with other measurements, a seven point Likert type scale, with endpoints labeled "Strongly Agree" and "Strongly Disagree" were used for each item. A respondent's mean on the measurement items was used as his score for each of the five styles.

4. Social Desirability: Because the scales for Trust, Machiavellianism, and Negotiation Style may include statements that have socially desirable responses, four statements from the Crowne and Marlowe social desirability measure were also included as recommended by Smith (1967).
The social desirability response set is a need for approval found in some responses to personality test items (Crowne and Marlowe 1960). It is assumed that the "true" response is known in each case and that the main reason for not admitting the truth is a tendency to make oneself appear more socially acceptable. One may also be reluctant to admit negatively evaluated facts about oneself. The number of items on which an individual fails to admit the truth is taken as an index of his Social Desirability set and were calculated for each individual. Scores range from a minimum of 0 to a maximum of 4.

5. **Sourcing Preference**: Purchasing managers were provided with a definition of single sourcing and multiple sourcing. Respondents were asked to limit their responses to one commodity or commodity class for which they have primary purchasing responsibility. The sourcing preference was measured by determining attitude toward single sourcing. The statements used were developed through personal interviews with purchasing managers and tested in a pilot survey.

Each purchasing manager was asked to respond to ten statements regarding his attitude toward single or multiple sourcing. Respondents were asked to respond in a seven point Likert format where 7=Strongly Agree and 1=Strongly Disagree. The theoretical neutral point was therefore 40
(4.0 x 10 items), while the maximum score was 70 (7.0 x 10) and the minimum score was 10 (1.0 x 10 items).

6. **Firm**: Three traits of the participant's firm were measured. The size of the firm as measured by annual sales volume, the total number of employees, and the type of industry were determined.

7. **Demographics**: Information on education, income, age, sex, and marital status was also collected.

**Analysis**

**Measure Purification**

Item analyses were conducted on the measures used for the three variables of interest. Cronbach's alpha was used to assess reliability. Principal factor analysis with iteration was performed to assess the dimensionality of each of the constructs.

Techniques for scoring each of the independent variables, trust, Machiavellianism, and negotiation style, are discussed below. In addition, the method for assessment of both social desirability and single sourcing preference are provided.

**Trust**

It was expected that Trust would have four dimensions as identified by Chun and Campbell (1974). Loadings of >0.40 were used as a cutoff as suggested by Nunnally (1967).
Any items failing to load on any factor were excluded from further analysis. Cronbach alpha was then recalculated.

Responses to the twelve items on the trust dimensions were weighted and summed for a total score for generalized trust, ranging from 12 to 84. High Trusters were identified as those who score over the mean value while Low Trusters were those below the mean value.

**Machiavellianism**

Only one dimension has been identified in the Mach IV scale. However, principal factor analysis was used to determine if in fact there is only one dimension in this study. A cutoff value of >0.40 was used for each scale item. Items failing to load on any factor were excluded and Cronbach alphas were recalculated.

Responses to the twenty items on the Machiavellian scale were weighted and summed, with 20 points added as suggested by Christie and Geis (1970). Scores thus ranged from 40 to 160. Individuals scoring above the mean value were identified as High Machiavellians and those below the mean value were Low Machiavellians.

**Negotiation Style**

Factor analysis was used on the twenty eight item scale to determine the dimensionality of the construct. As experienced by Perdue, Day, and Michaels (1986) it was
expected that five factors would be identified, corresponding to Thomas' (1976) five styles. A cutoff value of >0.40 was used for each scale item. Items not loading on any factor were excluded from further analysis and coefficient alphas were again calculated. The respondent's mean value for each of the five negotiation style was calculated.

Social Desirability

As suggested by Smith (1967), Pearson product moment correlation coefficients were calculated between each individual's total social desirability score and each of the items for each independent variable. The resulting set of correlation coefficients were examined to determine if any are significant at the 0.01 level.

As experienced in prior studies of trust (Chun and Campbell 1974; Corazzini 1977; Rotter 1967), Machiavellianism (Chonko 1982; Hunt and Chonko 1984), and negotiation style (Dion and Banting 1988; Perdue, Day, and Michaels 1986), it was hoped that the measures would not be contaminated by social desirability. If in fact any measures were so affected, the remedy suggested by Smith (1967) would be used to adjust responses.
Sourcing Preference

Principal factor analysis was used in the ten item scale to determine dimensionality of the construct. It was expected that only one dimension would be identified.

A cutoff value of >0.40 was used for each scale item. Items failing to load on any factor were excluded and Cronbach alphas were recalculated as suggested by Churchill (1979).

Responses to the ten items on the scale were weighted and summed. Scores ranged from 10 to 70. Individuals scoring above the mean value were identified as single sourcers while those scoring below the mean value were multiple sourcers.

Data Analysis

Hypotheses 1 and 2 were tested using a t-test. The independent variable was sourcing preference. The t-tests were used to determine whether there were differences in mean scores on both generalized trust and Machiavellianism between Purchasing Managers who were identified as single sourcers and those who were identified as multiple sourcers. A significance level of 0.05 was specified as the maximum allowable type 1 error rate.

Hypotheses 3a and 3b were also tested using t-tests. Those identifying with both the collaborative negotiation style (Hypothesis 3a) and the competitive style (Hypothesis
3b) were compared with all others to see if there was any difference between the means of those who were identified as single sourcers and those who were identified as multiple sourcers. Again, 0.05 was specified as the maximum allowable type 1 error rate.

For Hypothesis 3a, each respondent's mean score on the collaborative scale was used. For Hypothesis 3b, each respondent's mean score on the competitive scale was used.

Hypothesis 3c was tested by comparing the grand means for each of the measures averaged across all respondents. A simple comparison between the collaborative style and all others was made. Because the means were not independent, it was not appropriate to do ANOVAs. However, confidence intervals were included for descriptive purposes.

Hypothesis 3d was tested by using a simple frequency analysis of the styles which each respondent rates highest. Again, neither t tests nor ANOVAs could be conducted.

**Discriminant Function**

A two group multiple discriminant analysis of the data explored the relationship between sourcing preference and trust, Machiavellianism, and collaborative style. Only the respondent's score on the collaborative scale was used in the analysis. Perdue, Day, and Michaels (1986) as well as Dion and Banting (1988) determined that the collaborative style is predominant today in purchasing situations.
As suggested by Hair, Anderson, and Tatham (1985), the specific purposes of multiple discriminant analysis are: 1) to determine if statistically significant differences exist between the average score profiles of the two defined sourcing preferences, 2) to establish procedures for classifying the purchasing managers into groups on the basis of their scores on trust, Machiavellianism, and collaborative negotiation style, and 3) to determine which of the three variables account most for the differences in the average score profiles of the two sourcing preferences.

Multiple discriminant analysis is used in a situation when factors differentiate one group from another, such as light and heavy users, and loyal and non-loyal customers and has been successfully used in marketing studies (Frank, Massy, and Morrison 1965). Discriminant analysis is used to determine which factors are associated with one group's probability of falling into one of several categories. It is aimed at predicting customer behavior as well as determining the relative importance of various customer characteristics as contributors to prediction. However, before making statements of predictive power, it is necessary to demonstrate that the observed results are better than might be expected by chance.

Multiple discriminant analysis can be divided into three major stages: 1) derivation, 2) validation, and 3)
interpretation (Hair, Anderson, and Tatham 1985). Each of these stages will be discussed below.

**Derivation**

As discussed above, the dependent variable was single source preference and the independent variables were trust, Machiavellianism, and collaborative negotiation style. The total sample was divided into two groups: the analysis sample and the holdout sample. The analysis sample was used to develop the discriminant function while the holdout sample was used to test the discriminant function. Both groups were of equal size.

The stepwise method was used to enter the independent variables into the discriminant function. After the discriminant function was computed, the level of significance was determined. The initial level of significance that was used was 0.05, although adjustment might be made during the actual analysis.

**Validation**

The optimum cutting score was determined and a classification matrix was developed. Both the maximum chance criterion and the proportional chance criterion were developed. The classification accuracy was specified to be at least 25 percent greater than that achieved by chance.
If this accuracy was not obtained, further analysis might not be conducted.

**Interpretation**

If the discriminant function was statistically significant and the classification accuracy was acceptable, discriminant loadings would be obtained. Once the independent variables that make the greatest contribution in discriminating between the two sourcing preferences were known, the characteristics of the two groups would be profiled based on group means.
CHAPTER REFERENCES


The results of the analysis of data obtained from the study are presented in this chapter. First, a brief description of how the study was conducted is presented as well as attempts to assess the representativeness of the sample. Second, the results of measure purification and measure development for each of the independent variables are provided. Third, the results of the hypotheses tests for each of the six hypotheses are presented. Finally, the methodology and findings for the discriminant analysis are described.

Study Procedure

Questionnaires were sent to 2003 Purchasing Managers who were randomly selected from the mailing list obtained from the National Association of Purchasing Managers. A follow-up mailing was done ten days later utilizing coded envelopes. This procedure allowed for identification of those participants who were responding to the second, rather than the first, mailing. Three of the envelopes were returned address unknown.
A total of 806 questionnaires were returned, an initial response rate of 40.3%. A total of 783 usable responses are included in the study, a 39.2% response rate.

Representativeness of the Sample

Several analyses were completed to ensure accuracy of the results. Specifically, non response bias is assessed and demographics of respondents are provided. A rationale for reducing the number of firms included in the analysis is also provided.

Non response bias

To assess whether there was any nonresponse bias, comparisons were made between the first mailing and the second mailing (Table 1). Because they were two independent samples and categorical data was being used, the Kolgomorov-Smirnov test was used to test for any difference in means between the first and second mailings.

Using a two-tailed probability test, no differences were found between the two groups of respondents on any of the following variables: SIC code, total sales volume of company, number of employees, level of education, gender, marital status, age, and income. There were no significant differences in purchasing manager characteristics between the two mailings.
### Table 1

**Kolgomorov-Smirnov Test of Difference in Means Between First and Second Mailings**

<table>
<thead>
<tr>
<th>Variable</th>
<th>K-S</th>
<th>2-tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Industrial Classification</td>
<td>.700</td>
<td>.700</td>
</tr>
<tr>
<td>1990 Total Sales Volume of Company</td>
<td>.600</td>
<td>.864</td>
</tr>
<tr>
<td>Number of Employees at Company</td>
<td>1.080</td>
<td>.194</td>
</tr>
<tr>
<td>Level of Education</td>
<td>.659</td>
<td>.778</td>
</tr>
<tr>
<td>Gender of Respondent</td>
<td>.781</td>
<td>.576</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.345</td>
<td>1.000</td>
</tr>
<tr>
<td>Age of Respondent</td>
<td>.343</td>
<td>1.000</td>
</tr>
<tr>
<td>1990 Income of Respondent</td>
<td>1.050</td>
<td>.221</td>
</tr>
</tbody>
</table>

**Profile of NAPM Members**

It was initially proposed that a comparison be made between demographics of the sample and those of the NAPM membership. However, this was not possible because NAPM was unable to provide a profile of the membership. The demographics of the sample are provided in Table 1 in the appendix.
Level of Sales

A minimum level of annual sales was utilized to determine which companies would be included in the study. The purpose was to eliminate small firms which, because of their size, may be forced into certain sourcing decisions and not have the flexibility of selecting suppliers.

Upon examination of the results, it was determined that approximately 10% of the respondents worked for a company with sales less than $11 million in 1990. To eliminate small companies from the study, an arbitrary cut-off level of $11 million in annual sales was utilized. This decision was made subjectively by looking at the percentage breakdown of firm size as indicated in the appendix. This left a total of 710 responses to be used in the study.

Measure Purification

As mentioned in chapter three, each of the variables used in the study were examined to determine reliability. These variables include generalized trust, Machiavellianism, negotiation style, social desirability, and sourcing preference. The major findings from each of these analyses are presented in Table 2.
Table 2

Factor Analysis and Reliability Assessment

<table>
<thead>
<tr>
<th>Scale</th>
<th>Number of Dimensions</th>
<th>Variance Explained</th>
<th>Chronbach's Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized Trust Scale</td>
<td>4</td>
<td>56.2%</td>
<td>.7356</td>
</tr>
<tr>
<td>Machiavellianism Scale</td>
<td>5</td>
<td>46.4%</td>
<td>.7163</td>
</tr>
<tr>
<td>Negotiation Style Scale</td>
<td>7</td>
<td>58.6%</td>
<td>.7825</td>
</tr>
<tr>
<td>Collaborative Style</td>
<td>na</td>
<td>na</td>
<td>.7970</td>
</tr>
<tr>
<td>Competitive Style</td>
<td>na</td>
<td>na</td>
<td>.7722</td>
</tr>
<tr>
<td>Sharing Style</td>
<td>na</td>
<td>na</td>
<td>.6998</td>
</tr>
<tr>
<td>Accomodative Style</td>
<td>na</td>
<td>na</td>
<td>.7655</td>
</tr>
<tr>
<td>Avoidance Style</td>
<td>na</td>
<td>na</td>
<td>.7469</td>
</tr>
<tr>
<td>Sourcing Preference</td>
<td>2</td>
<td>61.2%</td>
<td>.8716</td>
</tr>
</tbody>
</table>

**Generalized Trust**

Principal components analysis was performed on the generalized trust scale using varimax rotation. Four dimensions, which explained 56.2% of the variance, were identified. Each of the twelve items in the scale had a loading of at least .43 on one of the factors. Therefore, all twelve items were included in the analysis. Chronbach's alpha for the twelve item scale was .74, which is acceptable.
Machiavellianism

Principal components analysis was performed on the Machiavellianism scale resulting in the identification of five factors. These factors explained 46.4% of the variance in the 20 items. Based on the use of loadings greater than .4 as a cutoff point, one item failed to load on any factor and was excluded from further analyses. Chronbach's alpha for the measure was .72.

Negotiation Style

Principal components analysis was performed on the negotiation style inventory. Seven factors, explaining 58.6% of the variance, were identified. Although only five styles were identified in Thomas' typology, this is evidence that possibly two of the negotiation styles, collaboration and avoidance, may have two dimensions. The factor loadings were at least .4 for each of the twenty eight items and all were included in the analysis. Chronbach's alpha for the negotiation style scale was .78.

Item analyses were also conducted for each of the five negotiation style measures. Corrected item-total correlations were generally consistent with 27 of the 28 correlations greater than .40. Chronbach alphas ranged from .70 to .80 for each of these measures.
Sourcing Preference

Principal components analysis was performed on the sourcing preference scale. Two dimensions, which together explained 61.2% of the variance, were identified. Factor loadings ranged from .68 to .80. Cronbach's alpha for the sourcing preference scale was .87.

Social Desirability

As suggested by previous studies, a social desirability index was used in the study. Respondents' scores on each of the 70 items included in the survey were correlated with the sum of the four items from the Crowne and Marlowe (1960) measure (socially desirable responses were coded "1" while nonsocially desirable responses were coded "0"). Nine of the seventy items in the survey had significant correlations at the .01 level in a two-tailed test, suggesting they may be contaminated by social desirability.

Smith (1967) developed a procedure in which adjustments are made to results to allow for the respondent having given a socially desirable response. However, no exact guidelines have been provided to determine how much of an "adjustment" should be made to the response. In addition, more recent research (Arkin and Lake 1982; McCrae and Costa 1983; Wrobel and Lachar 1982) has suggested that adjusting for social desirability may decrease the validity of the findings. Block (1965) found that the factor structure stayed the same.
whether social desirability was controlled for or not. Dickens (1963) argued that only rarely are there significant gains in validity by accounting for social desirability. McCrae and Costa (1983) suggested that correcting scores for social desirability does "not enhance the validity" of the findings and that the widespread practice "should be questioned." A decision was therefore made to not adjust the results as manipulation of the data could result in artificially produced results.

Measure Development

In order to test the hypotheses, the scales were summed to determine the orientations of the respondents on generalized trust, Machiavellianism, and negotiation style. Because the measures involve a summed total, all missing responses were assigned a value of "4", equivalent to the neutral response on each item. The following discussion focuses on how the respondents were identified for each of these measures. The mean values and the theoretical neutral points are presented in Table 3.

Generalized Trust

The generalized trust scale consisted of 12 items. The respondent's score on each of the items was summed and a mean of the overall sample was calculated. The mean level of generalized trust was 44.46 against a theoretical neutral
point of 48. Respondents whose scores were higher than the mean were considered high trusters while those lower than the mean were considered low trusters.

Table 3

Means of the Summed Scales

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Neutral Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized trust</td>
<td>44.46</td>
<td>48</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>84.77</td>
<td>100</td>
</tr>
<tr>
<td>Sourcing preference</td>
<td>48.10</td>
<td>40</td>
</tr>
</tbody>
</table>

Machiavellianism

The Machiavellian scale consisted of 20 items. However, one of these items failed to load on any factor and was thus excluded from the study. In order to allow for comparison with previous studies, 4 additional points, representing the neutral value for this item, were added to the Machiavellian scale.

The mean of the Machiavellian scale was 84.77, while the theoretical neutral point was 100. Respondents whose summed scores were higher than the mean were identified as High Machiavellians while those lower than the mean were considered Low Machiavellians.
Negotiation Style

The negotiation style scale contains five dimensions, representing each of the styles. Means were calculated for each of the styles (Table 4). Respondents who scored higher than the mean on the collaborative style (5.87) were identified as highly collaborative while those below the mean were non-collaborative. Respondents who scored higher than the mean on the competitive style (4.76) were considered highly competitive while those below the mean were non-competitive.

Table 4

Grand Means of the Negotiation Style Scale

<table>
<thead>
<tr>
<th>Negotiation Style</th>
<th>Mean</th>
<th>Interval</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative</td>
<td>5.87</td>
<td>4.67 - 7.07</td>
<td>1</td>
</tr>
<tr>
<td>Sharing</td>
<td>5.18</td>
<td>3.50 - 6.86</td>
<td>2</td>
</tr>
<tr>
<td>Competitive</td>
<td>4.76</td>
<td>2.86 - 6.66</td>
<td>3</td>
</tr>
<tr>
<td>Accomodative</td>
<td>3.79</td>
<td>2.15 - 5.58</td>
<td>4</td>
</tr>
<tr>
<td>Avoidant</td>
<td>3.54</td>
<td>1.50 - 5.58</td>
<td>5</td>
</tr>
</tbody>
</table>

Sourcing Preference

The sourcing preference scale consisted of ten items which were summed to determine the score for the sourcing preference. The mean value was 48.1, while the median was 50, and the theoretical neutral point was 40. Because
sourcing preference will be used as the dependent variable in the hypothesis testing, respondents were not identified at this point as either single sourcers or multiple sourcers. A high score on the sourcing preference scale, however, indicates a preference for single sourcing.

**Hypothesis Testing**

The six hypotheses were tested using t-tests (Hypotheses 1, 2, 3a, 3b) and mean values (Hypotheses 3c and 3d). Results for the first four hypotheses are presented in Table 5.

**H1:** Purchasing Managers who have a high level of generalized trust, i.e. a High Truster, will demonstrate a preference for single sourcing rather than multiple sourcing.

As indicated in Table 5, using a one-tailed t-test high trusters had a higher preference for single sourcing than did low trusters (probability of .001). The mean score on the sourcing preference scale was 49.35 for high trusters and 46.89 for low trusters.

**H2:** Purchasing Managers who have a low level of Machiavellianism, i.e. a Low Mach, will demonstrate a preference for single sourcing rather than multiple sourcing.

Using a one tailed t-test, low Machs had a higher preference for single sourcing than did high Machs
(probability of .0005). The mean score on the sourcing preference scale was 49.52 for low Machs and 46.75 for high Machs.

Table 5

Hypothesis Testing Results

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>Mean</th>
<th>t-value</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High trusters</td>
<td>359</td>
<td>49.35</td>
<td>-3.06</td>
<td>.001</td>
</tr>
<tr>
<td>Low trusters</td>
<td>351</td>
<td>46.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Machs</td>
<td>362</td>
<td>46.75</td>
<td>3.44</td>
<td>.0005</td>
</tr>
<tr>
<td>Low Machs</td>
<td>348</td>
<td>49.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H3a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborative style</td>
<td>529</td>
<td>48.28</td>
<td>.74</td>
<td>.462</td>
</tr>
<tr>
<td>All other styles</td>
<td>181</td>
<td>47.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H3b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitive Style</td>
<td>85</td>
<td>48.15</td>
<td>-.31</td>
<td>.756</td>
</tr>
<tr>
<td>All other Styles</td>
<td>625</td>
<td>47.78</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H3a: Purchasing Managers who demonstrate a collaborative negotiation style will have a preference for single sourcing rather than multiple sourcing.
As indicated in Table 6, the collaborative negotiation style predominated among purchasing managers in this study. Over 69% of the respondents (492 respondents) rated highest on the collaborative style than any other styles. In addition, another 37 respondents tied on the collaborative style with other styles as the highest rated, representing 75% of the sample.

<table>
<thead>
<tr>
<th>Style</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative</td>
<td>492</td>
<td>69.3%</td>
</tr>
<tr>
<td>Sharing</td>
<td>88</td>
<td>12.4</td>
</tr>
<tr>
<td>Competitive</td>
<td>77</td>
<td>10.9</td>
</tr>
<tr>
<td>Avoidant</td>
<td>11</td>
<td>1.5</td>
</tr>
<tr>
<td>Accomodative</td>
<td>3</td>
<td>0.4</td>
</tr>
<tr>
<td>Ties</td>
<td>39</td>
<td>5.5</td>
</tr>
</tbody>
</table>

A one-tailed t-test was conducted, comparing respondents who rated the collaborative style highest and those who did not. As indicated in Table 5, using a one-tailed t-test, there was no significant difference between purchasing managers who rated highest on the collaborative style and those who did not (probability of .462).
Because the collaborative style was dominant among the respondents and there were a number of ties, a further analysis comparing purchasing managers who demonstrate a highly collaborative style with those who demonstrate a less collaborative style was completed. In this case, the mean value for collaborative style, 5.87, was used to classify respondents as either highly collaborative or less collaborative. Again, a one-tailed t-test was conducted. Highly collaborative purchasing managers demonstrated a preference for single sourcing rather than multiple sourcing (.015). The mean value for the highly collaborative respondents on the sourcing scale was 49.0. For the less collaborative respondents, the value was 47.2. Therefore, although Hypothesis 3a is rejected, there is sufficient reason to suggest that a "highly collaborative" negotiation style has a positive relationship to preference for single sourcing.

H3b: Purchasing Managers who demonstrate a competitive negotiation style will have a preference for multiple sourcing rather than single sourcing.

Seventy seven respondents (11% of the sample) rated highest on the competitive negotiation style, while an additional 8 tied with other styles. A one-tailed t-test was conducted comparing respondents who rated the competitive style highest and those who did not. As
indicated in Table 5, there was no difference between purchasing managers who demonstrated a competitive style and those who did not (probability .369).

H3c: Purchasing Managers in general will demonstrate a collaborative style more than any other style.

To evaluate the identification with each of the five negotiation styles, a comparison of the grand means for each of these measures was made. These grand means ranged from 5.87 for the collaborative style to 3.54 for the accommodative style. As indicated above and shown in Table 4, the collaborative negotiation style predominated among all respondents (5.87 mean value) and was perceived as being more consistent with these purchasing managers' own negotiation behavior than any of the others. Because these means are not independent, a t-test was not conducted. However, confidence intervals that indicate the ratings of each of the styles are provided in Table 4.

Table 6 presents the number of respondents whose scores were highest for each of the negotiation styles ("first-place finishers"). Again, the collaborative style dominated with over 69% of the respondents rating this style the highest. In addition, there were 39 cases in which ties for first place occurred. The collaborative style was involved in 37 of the ties for first place. If the ties are combined
with the highest ratings, the collaborative style was
dominant among 75% of the respondents.

**H3d: Few of the Purchasing Managers will demonstrate
either an accommodative or avoidance style.**

As indicated in Table 4, the grand mean for the
accommodative style was 3.79, while the grand mean for the
avoidant style was 3.54. Because the means are not
independent a t-test cannot be conducted. However, the
grand means were much lower for these two styles than the
others.

As indicated in Table 6, the accommodative style was
rated highest by only 3 respondents (.4% of the sample),
while the avoidance style was rated highest by only 11
respondents (1.5% of the sample).

**Discriminant Analysis**

Because generalized trust, Machiavellianism and a
highly collaborative negotiation style were shown to have
an influence on sourcing preference, a discriminant analysis
was conducted. The following summary follows the guidelines
of Hair, Anderson, and Tatham (1987). It will be explained
in the three stages of derivation, validation, and
interpretation.
Derivation

As suggested by Hair, et al (1987), the derivation stage consists of four steps. These include variable selection, sample division, computational method, and statistical significance.

Variable Selection

As discussed in chapter three, the dependent variable in this analysis was sourcing preference. Because this measure originated in the current study, there are no other comparable studies. Therefore, it is not possible to determine if, in fact, these sourcing levels are correct. Rather than use the mean value for sourcing preference, it was decided to use the median value. This helps to ensure that prior probabilities were as close as possible. Hence, the prior probabilities were .503 for multiple sourcers and .497 for single sourcers.

The independent variables in the analysis are the total summed scores on the generalized trust, Machiavellianism, and collaborative negotiation style. All of these are metric measures as required with discriminant analysis.

Sample Division

The total sample was divided into two groups, the analysis sample and the holdout sample. Both of these
groups were of equal size, as suggested by Hair, et al. Each group was selected using a random procedure.

**Computational Method**

The stepwise method was used to enter the independent variables into the discriminant function, one at a time, on the basis of their discriminating power. The Mahalanobis procedure was used to accomplish this stepwise procedure as it is based on generalized squared Euclidean distance that adjusts for unequal variances. In the stepwise procedure, all variables are initially excluded from the model and the variable that maximizes the Mahalanobis distance between the two groups is selected. As indicated in Table 7, all three variables had the minimum F value of 1.0 that is required for entry into the model.

Table 7

**Discriminant Analysis I**

<table>
<thead>
<tr>
<th>Stepwise Variable Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Prior to Step 1:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>After Step 1:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>After Step 2:</td>
</tr>
</tbody>
</table>
The first variable to enter the function was generalized trust, which had the highest F (4.9534) to enter. After entering generalized trust, the other two independent variables still had an F to enter greater than 1.0. The next variable entered was Machiavellianism, with an F of 1.7449. After entering Machiavellianism, the collaborative negotiation style had an F of 1.096, and, at step three, was entered into the model. Thus, all three variables were included in the model.

**Statistical Significance**

As indicated in Table 8, the discriminant function, with all three variables included is significant at .0519. The canonical correlation for the function is .1477. When squared (.1477^2 = .02182), only 2.2% of the variance in the dependent variable, sourcing preference, can be accounted for by this model.

**Validation**

Given the significance level of .05, the analysis proceeded to the next stage. The second stage involves the validation of the discriminant function. Classification tables for both the analysis sample and the holdout sample were developed and appear in Table 9. As indicated, the
percent of "correct classifications" in the analysis sample
was 56.61% and 53.31% in the holdout sample.

Table 8

Summary Table

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Min. D^2</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Trust</td>
<td>.05597</td>
<td>.0267</td>
</tr>
<tr>
<td>2</td>
<td>Machiavellianism</td>
<td>.07602</td>
<td>.0361</td>
</tr>
<tr>
<td>3</td>
<td>Collaborative style</td>
<td>.08872</td>
<td>.0519</td>
</tr>
</tbody>
</table>

Canonical Discriminant Function

<table>
<thead>
<tr>
<th>Function</th>
<th>Eigenvalue</th>
<th>Correlation</th>
<th>Square</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.0223</td>
<td>.1477</td>
<td>7.732</td>
<td>.0519</td>
</tr>
</tbody>
</table>

The proportions of respondents in each category are relatively equal, .503 for multiple sourcers and .497 for single sourcers for both the holdout and analysis samples. The proportional chance criterion is .50 and the maximum chance criterion is also .503. Thus, the discriminant function results in only a 6.6% increase in accuracy over that achieved by chance (53.31 - 50.3 as a percent of 50.3). As indicated in the methodology section, chapter three, the analysis was not to proceed to the interpretation stage if
the classification accuracy was not at least 25 percent greater than that achieved by chance.

TABLE 9
Classification Tables
Analysis Sample

<table>
<thead>
<tr>
<th>Actual</th>
<th>Predicted</th>
<th>Multiple Sourcer</th>
<th>Single Sourcer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Sourcer</td>
<td>62.6%</td>
<td>37.4%</td>
<td></td>
</tr>
<tr>
<td>Single Sourcer</td>
<td>49.5%</td>
<td>50.5%</td>
<td></td>
</tr>
</tbody>
</table>

Correctly Classified = 56.61%

Holdout Sample

<table>
<thead>
<tr>
<th>Actual</th>
<th>Predicted</th>
<th>Multiple Sourcer</th>
<th>Single Sourcer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Sourcer</td>
<td>56.2%</td>
<td>43.8%</td>
<td></td>
</tr>
<tr>
<td>Single Sourcer</td>
<td>50.3%</td>
<td>49.7%</td>
<td></td>
</tr>
</tbody>
</table>

Correctly Classified = 53.31%

Additional Analysis

Because of the disappointing results in classification accuracy, the data were reviewed for the possible inclusion
of additional variables in the model. Respondents were asked in the study what percentage of goods for which they were responsible were currently being single sourced. Because the response was measured using interval data, the variable was capable of being included in the discriminant analysis as an independent variable. Another discriminant analysis was conducted which included four independent variables: generalized trust, Machiavellianism, collaborative negotiation style, and percent single sourced. Discussed below are the results of this additional analysis.

**Derivation**

The dependent variable, sourcing preference, was used in the analysis. The independent variables included the summed scores for generalized trust, Machiavellianism, and collaborative negotiation style measures as well as the percentage of current dollar purchases single sourced, or percent single sourced. The sample was divided in the same way, and the stepwise procedure was again used.

As indicated in Table 10, at the beginning of the analysis all four variables had an F to enter of at least 1. The maximum D2 in this model was associated with the percent single sourced (21.766). At step two, the collaborative negotiation style was entered with an F of 14.907. At step 3, Machiavellianism was entered with an F of 8.487. At this
point, generalized trust had an insufficient F level to be included in the function.

Table 10

**Discriminant Analysis II**

**Stepwise Variable Selection**

<table>
<thead>
<tr>
<th>Variable</th>
<th>F to Enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to Step 1:</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>1.992</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>11.177</td>
</tr>
<tr>
<td>Collaborative style</td>
<td>16.771</td>
</tr>
<tr>
<td>Percent single sourced</td>
<td>21.766</td>
</tr>
<tr>
<td>After Step 1:</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>1.078</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>11.529</td>
</tr>
<tr>
<td>Collaborative style</td>
<td>14.907</td>
</tr>
<tr>
<td>After Step 2:</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>1.201</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>8.487</td>
</tr>
<tr>
<td>After Step 3:</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>.1403-01</td>
</tr>
</tbody>
</table>

With the three independent variables entered into the model, the discriminant function is highly significant (<.0000) and has a canonical correlation of .3439 (Table 11). By squaring the canonical correlation, 11.8% of the variance in sourcing preference (the dependent variable) can be explained by this model, which includes percent single
sourced, collaborative negotiation style, and Machiavellianism as independent variables.

Table 11

**Discriminant Analysis II**

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>Min. D²</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Percent single sourced</td>
<td>.24938</td>
<td>.0000</td>
</tr>
<tr>
<td>2</td>
<td>Collaborative style</td>
<td>.43129</td>
<td>.0000</td>
</tr>
<tr>
<td>3</td>
<td>Machiavellianism</td>
<td>.53957</td>
<td>.0000</td>
</tr>
</tbody>
</table>

**Canonical Discriminant Function**

<table>
<thead>
<tr>
<th>Function</th>
<th>Chi Value</th>
<th>Correlation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.1342</td>
<td>.3439</td>
<td>44.002</td>
</tr>
</tbody>
</table>

**Validation**

Classification matrixes were again developed for both the analysis and holdout samples (Table 12). In this case, the classification accuracy for the analysis sample was 65.98% while that for the holdout sample was 61.04%. The classification accuracy of 61.04% is substantially higher than the proportional chance criterion of 50% and the
maximum chance criterion of 50.3%. In fact, the classification accuracy is 21.4% greater than that achieved by chance \((61.04 - 50.30 \text{ as a percent of } 50.30)\). Although some researchers insist on a higher level of accuracy, Hair, et al (1987) suggest that one look at the costs in relation to the value obtained. Because this is an initial study and costs are unknown, a decision was made to proceed to the interpretation stage.

### TABLE 12

Classification Tables

**Analysis Sample**

<table>
<thead>
<tr>
<th>Actual</th>
<th>Predicted</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Sourcer</td>
<td>79.1%</td>
<td>20.9%</td>
</tr>
<tr>
<td>Single Sourcer</td>
<td>50.3%</td>
<td>49.7%</td>
</tr>
</tbody>
</table>

Correctly Classified = 65.98%

**Holdout Sample**

<table>
<thead>
<tr>
<th>Actual</th>
<th>Predicted</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Sourcer</td>
<td>76.0%</td>
<td>24.0%</td>
</tr>
<tr>
<td>Single Sourcer</td>
<td>53.8%</td>
<td>46.2%</td>
</tr>
</tbody>
</table>

Correctly Classified = 61.04%
Interpretation

As suggested by Hair, interpretation involves two distinct phases. The first is examining the discriminant functions to determine the relative importance of each independent variable in discriminating between the groups and the second is examining the groups means for each variable to profile the differences in the groups.

Discriminant Functions

In Table 13, the loadings of the variables are presented in rank order in the structure matrix. Thus, the order of importance of the independent variables are percent single sourced, collaborative negotiation style, and Machiavellianism. Percent single sourced discriminates the most and Machiavellianism the least. However, all three are significant discriminators between those having a single sourcing preference and those having a multiple sourcing preference.

As indicated in Table 13, group centroids were -.32878 for multiple sourcers and .40577 for single sourcers. The standard canonical discriminant function coefficients can be used to classify people into either of the two groups by multiplying each summed scale total by its coefficient, and summing the results. Thus, for any respondent, classification is achieved by the following:
.68251 (Current level of single sourcing) 
+ .52991 (Collaborative negotiation style summed total) 
- .4511 (Machiavellian scale total).

Respondents whose discriminant score is negative will be classified as multiple sourcers while those whose discriminant score is positive will be classified as single sourcers.

Table 13

Discriminant Analysis II

Structure Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>Loadings on Function 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent single sourced</td>
<td>.67984</td>
</tr>
<tr>
<td>Collaborative style</td>
<td>.59677</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>-.48717</td>
</tr>
</tbody>
</table>

Group Centroids

<table>
<thead>
<tr>
<th>Source</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Sourcers</td>
<td>-.32878</td>
</tr>
<tr>
<td>Single Sourcers</td>
<td>.40577</td>
</tr>
</tbody>
</table>

Standard Canonical Discriminant Function Coefficients

<table>
<thead>
<tr>
<th>Source</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machiavellianism</td>
<td>-.4511</td>
</tr>
<tr>
<td>Collaborative style</td>
<td>.52991</td>
</tr>
<tr>
<td>Percent single sourced</td>
<td>.68251</td>
</tr>
</tbody>
</table>
Group Means

When one refers to the table of means (Table 14), one concludes that higher current levels of single sourcing are associated with single sourcing preferences. Low levels of Machiavellianism are associated with single sourcing preferences and a highly collaborative style is associated with single sourcing preferences.

TABLE 14

Discriminant Analysis II

Table of Means

<table>
<thead>
<tr>
<th></th>
<th>Multiple Sourcers</th>
<th>Single Sourcers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized trust</td>
<td>43.713</td>
<td>44.892</td>
<td>44.241</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>86.267</td>
<td>82.506</td>
<td>84.584</td>
</tr>
<tr>
<td>Collaboration style</td>
<td>40.046</td>
<td>41.880</td>
<td>40.867</td>
</tr>
<tr>
<td>Percent single sourc</td>
<td>38.215</td>
<td>52.800</td>
<td>44.750</td>
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</table>

Standard Deviations

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<th>Multiple Sourcers</th>
<th>Single Sourcers</th>
<th>Total</th>
</tr>
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<tr>
<td>Generalized trust</td>
<td>7.162</td>
<td>8.539</td>
<td>7.819</td>
</tr>
<tr>
<td>Machiavellianism</td>
<td>10.308</td>
<td>10.751</td>
<td>10.659</td>
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<tr>
<td>Collaboration style</td>
<td>4.673</td>
<td>3.483</td>
<td>4.276</td>
</tr>
<tr>
<td>Percent single sourced</td>
<td>29.277</td>
<td>29.133</td>
<td>30.062</td>
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</table>
Specifically, the findings suggest that purchasing managers who have a high level of current single sourcing, and exhibit Low Machiavellianism as well as a highly collaborative negotiation style will have a tendency to prefer single sourcing.
CHAPTER REFERENCES


CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

This chapter includes a discussion of the findings for each of the variables including sourcing preference, generalized trust, Machiavellianism, and negotiation style. Also included are a review of the results of the discriminant analysis, limitations of the study, conclusions, and suggestions for future research.

Findings

Findings for each of the variables in the study are discussed below. Contributions to marketing theory as well as significance for marketing management are explored.

Sourcing Preference

It appears that the sourcing preference scale is a valid scale for measuring attitudes about single sourcing and multiple sourcing. In both the pre-test and the actual study, reliability levels of the scale were high. In fact, reliability was higher than the other three scales used, all of which had been used in prior studies.
Theoretical Implications

The sourcing preference scale has two dimensions: benefits of single sourcing and risks of multiple sourcing, with six of the items loading on the first and four on the second. With strong loadings on these factors, as well as the high Chronbach alpha for the scale, it appears to capture the beliefs perceived by purchasing managers about sourcing alternatives. This suggests that the sourcing preference scale is a valid measure for studying the attitudes of individuals toward sourcing alternatives.

The only other single sourcing measure that has been used in studies is the current level of single sourcing. The current level of single sourcing, however, can be impacted by a variety of organizational variables (size of company, influence levels, corporate culture) as well as environmental variables (level of technology, regulation, deregulation, level of competition). In fact, the current level of single sourcing may not be under the control of the purchasing manager himself. The sourcing preference scale, on the other hand, more accurately reflects the individual purchasing manager's opinions and attitudes, and may not be as affected by other organizational and environmental variables as the current level of single sourcing.

Validation of the scale suggests its availability for examination with a wide variety of variables that have been explored in other studies. The sourcing preference scale
can be used in conjunction with supplier selection factors, influence levels on the purchase decision, and situational variables such as task type or role conflict.

Managerial Implications

The sourcing preference scale indicates it is possible to measure the industrial buyer's preference for single sourcing. For firms that are committed to partnering agreements, and single sourcing in particular, the scale can be used to assess potential employees. If employees are identified as having a preference for multiple sourcing, training programs that emphasize the benefits of single sourcing may be appropriate.

An interesting phenomenon occurred in the study regarding sourcing preference. As mentioned earlier, an analysis was done to determine whether there were any differences between the characteristics of purchasing managers who responded to the first mailing and those who responded to the second mailing. Although there were no differences on demographics, sourcing preference was the only variable that was significantly different (p=.017) between the two mailings. Respondents to the first mailing had a significantly higher level of single sourcing preference than did respondents to the second mailing.

This suggests that individuals who responded immediately to the questionnaire may have done so because
they have an interest in single sourcing. Thus they may have been more predisposed to respond as the sourcing questions were at the beginning of the questionnaire. In addition, respondents who prefer multiple sourcing may have decided not to respond initially because they were either not familiar with the ramifications of single sourcing or were not favorably predisposed towards the practice.

**Generalized Trust**

As hypothesized, purchasing managers who have a high level of trust in others tend to view single sourcing more favorably. Those who were identified as low trusters have a preference for multiple sourcing.

**Theoretical Implications**

The findings indicate that generalized trust is a meaningful variable in the decision to single source products. Other studies in the field of marketing (Schurr and Ozanne 1985; Swan and Nolan 1985; Swan, Trawick and Silva 1985) have examined situational trust or trust in the salesperson from the firm. Although specific trust is important in the purchasing decision, generalized trust is equally important, as indicated in the current study. Generalized trust is positively related to single sourcing preference and is thus an important variable for inclusion
in additional industrial studies of cooperative relationships.

Managerial Implications

In order to work in close relationships with selling firms and sales representatives, purchasing managers must have some faith that they will follow through on their promises. By trusting others, they should be more willing to enter into open relationships with sales representatives.

For buying firms, measures can be taken in screening and selecting employees to ensure that purchasing managers are High Trusters. Training programs, including role playing and interpersonal exercises can also be developed to help employees become more trusting individuals. Sales representatives should be encouraged to seek out purchasing managers who are High Trusters as they are more prone to single source and may be encouraged to enter into these relationships.

Machiavellianism

As hypothesized, purchasing managers who have a low level of Machiavellianism view single sourcing favorably. In single sourcing arrangements as well as other partnering types of agreements, the buyer and seller must cooperate with each other.
A true Machiavellian looks out for himself and will try to use people to get something done. This is indicative of the "old-style" of purchasing behavior, in which buyer and seller participated in "arms' length" activities, not as a team.

**Theoretical Implications**

Machiavellianism is a significant variable in modeling sourcing preferences of industrial buyers. A high Machiavellian has been characterized as exploitative or intransigent. These characteristics are the antithesis of what is required in a cooperative relationship. Thus, in the ongoing buyer-seller relationships, particularly those that include single sourcing, a low level of Machiavellianism has a positive influence on single sourcing preference.

Machiavellianism has been examined in other fields such as sociology and psychology. Results from the current study suggest that it is a valid variable for inclusion in other marketing studies.

**Managerial Implications**

Firms who are interested in single sourcing should screen and select individuals in purchasing who have low levels of Machiavellianism. In addition, training programs should emphasize cooperation and cooperative techniques for
gaining compliance from sales representatives. Salesmen should seek out purchasing managers who have low levels of Machiavellianism as they are more prone to single source and may be interested in building ongoing relationships with supplier firms.

**Negotiation Style**

The collaborative negotiation style, as predicted, predominated among respondents to the survey. Three fourths of the purchasing managers indicated that the collaborative style was their normal mode of behavior in negotiation by scoring highest on the collaborative scale. The number of ties (5.5% of the purchasing managers) may also indicate that purchasing managers have several styles and adapt to each situation as it arises.

The study found no differences in sourcing preferences between individuals who exhibit a collaborative negotiation style as their dominant style and those who demonstrate other negotiation styles. However, this may be due to the fact that the majority of purchasing managers today identify with a collaborative style, i.e., it is the dominant style. When purchasing managers are divided into two groups, one being highly collaborative (by scoring higher than the median on the collaborative scale) and the other non-collaborative (scoring lower than the median), those who are highly collaborative prefer single sourcing. Therefore, the
higher the score on the collaborative scale, the more the purchasing manager prefers single sourcing.

Surprisingly, the competitive negotiation style was also evident among those who preferred single sourcing as well as those who preferred multiple sourcing. One explanation for this is that although purchasing managers may like the idea of single sourcing, they may not have overcome the traditional attitude that one cannot be open with suppliers. Therefore, they prefer single sourcing but still believe they must pursue their own side of the issue. Possibly they have not yet made the transition to a "win-win" type of negotiation.

Another explanation for this finding is that the competitive style may be viewed as "undesirable" and purchasing managers may have been reluctant to identify with it. This explanation is supported by a correlation between competitive style and the social desirability index (.2346 at .01 significance). In fact, the competitive style was the only negotiation style that showed a correlation with the social desirability index. Thus, a purchasing manager who prefers multiple sourcing may recognize that cooperation is the "buzzword" in today's world and may be reluctant to admit to having a competitive style of negotiation behavior.
**Theoretical Implications**

Collaborative negotiation style is a significant interpersonal variable in sourcing behavior and a positive influence on sourcing behavior. A competitive negotiation style, on the other hand, does not seem to influence sourcing preferences.

Purchasing managers seem to exhibit multiple negotiation styles with different situations. This is similar to Weitz' (1981) adaptive behavior that has been identified among salesmen.

In this study, there were seven dimensions identified in the factor analysis, suggesting that two of the styles (collaboration and avoidance) from Rahim's typology may themselves have two dimensions. The dominant negotiation styles used by purchasing managers may not be accurately measured by Rahim's typology.

**Managerial Implications**

Firms should recognize that most purchasing managers today use a collaborative negotiation style. If they plan to engage in single sourcing, they should hire individuals who have a highly collaborative style. Training sessions should emphasize the collaborative style and teach cooperative behavior. Firms should also equip personnel with the knowledge and skills necessary to develop a win-win
negotiating style as well as the skills to adapt their negotiation style to different situations.

**Discriminant Analysis**

The ability of the three variables, generalized trust, Machiavellianism, and collaborative negotiation style to discriminate between those who have a preference for single sourcing and those who have a preference for multiple sourcing is not strong. In fact, the "hit rate" is slightly more than by chance. However, when current levels of single sourcing are included in the discriminant function, the "hit rate" increases enough to make it acceptable.

This finding suggests that the current level of single sourcing engaged in by the purchasing manager may affect his attitude toward single sourcing. In fact, the correlation between the sourcing preference scale and the current level of single sourcing is high (.3635 at the .01 significance level). Thus, once he has engaged in single sourcing, the purchasing manager may discover the benefits of working closely with a supplier, and in fact may learn to appreciate single sourcing. This fact may have implications for the idea that single sourcing is beneficial to the firm.
Theoretical Implications

The combination of the three variables originally proposed is not sufficient to discriminate between individuals who have a preference for single sourcing and those who have a preference for multiple sourcing. The inclusion of the percentage of purchases currently single sourced increases the ability to discriminate between those who prefer single sourcing and those who prefer multiple sourcing. This provides support for the need to expand the model beyond individual and interpersonal characteristics to situational variables.

The study suggests that there are antecedent variables including individual characteristics (generalized trust and Machiavellianism) and interpersonal characteristics (collaborative negotiation style) that influence source preference. There are also moderating variables such as situational characteristics (current level of single sourcing) that significantly impact sourcing preferences. These relationships can be conceptualized as depicted in Figure 1.
Managerial Implications

The results of the discriminant analysis suggest that firms who want to hire purchasing managers who favor single sourcing should look for those who are already engaged in single sourcing and who have a cooperative approach to
others (low Machs) as well as a collaborative negotiation style. Generalized trust was not included in the discriminant function, possibly because of multicollinearity between it and Machiavellianism.

Marketing Managers are encouraged to use a collaborative negotiation style with purchasing managers. They should also approach firms who are already engaged in single sourcing as they will more favorably be disposed towards single sourcing. Also, in order to retain accounts, they should emphasize continued cooperation and stress cooperation in training.

Limitations

Some limitations of the study should be considered when evaluating the findings.

1. Only three industries (chemicals, electronics, and transportation) were included in the study. The purpose of including three industries was to provide a variety of sourcing alternatives. However, results of the survey cannot be generalized to other industries.

2. Because of the use of a mail survey, there was no way to control who responded. Though the questionnaires were mailed to purchasing managers, those actually replying may have been less involved in the purchasing activity.

3. There was no adjustment for social desirability. Because some individuals seemed to give socially desirable
answers and some items on the measures were correlated with the index, it is possible that some of the responses were affected by the "expected" responses to questions. However, this would not change results for any of the first three hypotheses. By making changes to the data, however, hypothesis 3b might have been confirmed. As earlier discussed, the decision was made to make no adjustments in order to ensure the validity of the findings.

4. The purchasing manager is not the ultimate authority in the decision to single source. This becomes especially important when one sees how influential the current level of single sourcing is in the sourcing preference measure. Others in the company may have made the decision to engage in single sourcing, which in turn may have influenced the purchasing manager's sourcing preference.

5. The findings represent only the buyer-oriented perspective of the buyer-seller relationship as they are based on the responses of purchasing professionals. Characteristics of the seller or sales representative may also be influential in the single sourcing decision.

Conclusions

Single sourcing is a growing phenomenon in firms today and a better understanding of its parameters is necessary.
There is a paucity of studies regarding single sourcing and a general lack of understanding of what is involved. It is apparent from the current study that purchasing managers do have preferences for either single sourcing or multiple sourcing and that these can be measured effectively through the scale that was developed.

It is also evident that purchasing managers who engage in single sourcing need to have a high level of trust in others and the desire to work in a cooperative manner. Those who engage in single sourcing should approach the negotiation with the "win-win" attitude, indicative of the collaborative approach. It is apparent, however, that purchasing managers may use several approaches in negotiating with sales representatives.

The competitive approach to negotiation behavior is still existent among purchasing managers. Some may be reluctant to shed their old beliefs and make the transition to open agreements and cooperative behavior. Indeed, some purchasing managers who prefer single sourcing identify with a competitive style.

The study suggests it is meaningful to model the sourcing preferences of buyers as a function of individual, interpersonal, and situational characteristics. It is suggested that other variables be included to expand the range of both antecedent and moderating variables that contribute to sourcing preferences.
The importance of the current level of single sourcing on sourcing preference suggests that single sourcing may be viewed as a positive sourcing strategy. Those who currently single source some items become favorably disposed towards single sourcing in general. They may have realized the benefits of single sourcing and wish to expand single sourcing to other purchases.

Future Research

A better understanding of single sourcing needs to be achieved. More in depth discussions (personal interviews and focus groups) among purchasing managers may help to identify how single sourcing decisions are made and suggest other ways to describe the concept. Rather than studying only the purchasing manager, the entire buying center should be studied and attitudes toward single sourcing assessed. Other situational variables may be discovered that influence the level of single sourcing.

Sourcing preferences should also be examined in other industries. Exploration should include identification of other ways of capturing single sourcing levels, such as by part number, by component, or by end use of the product. Additional research is needed to identify whether there are differences when the supplier's product is highly differentiated or when there is after-sale service, so that
there is an expectation of a continuing buyer-seller relationship.

Given the importance of the current level of single sourcing, investigation should be made of changes in attitudes when a single sourcing opportunity is presented to the purchasing manager. In addition, the question of how the change in attitude comes about should be an area of investigation.

An investigation of the negotiation style typology, that has been used with purchasing managers should also be undertaken. Given some of the findings in this study, it is possible that the Rahim typology is not capturing all of the dimensions of purchasing manager behavior.

Because of the strong influence of some of the individual characteristics (generalized trust and Machiavellianism), other personal characteristics should be explored in the future. For example, the effects of perceived risk, locus of control, and other characteristics that have been explored in the salesmanship literature should be explored.

Additional interpersonal variables should also be examined to determine the impact on sourcing preferences. These interpersonal variables could include characteristics that have been studied among salespersons including specific trust, role conflict and role ambiguity. Purchasing managers as well as salespersons are boundary individuals.
They may experience role related conflicts, particularly in view of the fact that purchasing managers have had changing responsibilities.

Other situational variables such as task type should also be examined. These variables may not only contribute to the model, but may interact with individual variables to impact interpersonal characteristics.

As a further extension of the model, the relationship between single sourcing preference and other outcome variables should be explored. The impact of sourcing preference on other variables involved in partnering agreements should be investigated. These include long term contracts, just in time arrangements, information exchange, and automated inspections.

Finally, investigation should extend to include the supplier's role and perception within the buyer-seller trading relationship. Individual, interpersonal, and situational characteristics on the other side of the dyad should have influence on the development of single sourcing agreements.

Because the ongoing buyer-seller relationship and single sourcing in particular are recent developments, only the frontiers of these relationships have been explored. Further research is required on a variety of relationships to explore not only the contributing variables but also causal links between the variables.


APPENDIX
Demographics of Respondents

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<thead>
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<th>包含</th>
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<tr>
<td></td>
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<tr>
<td>CERTIFIED PURCHASING MANAGER (CPM)?</td>
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<td>Chemicals</td>
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<tr>
<td>Electronics</td>
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<tr>
<td>Transportation</td>
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<td>Other</td>
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<td>ANNUAL SALES VOLUME - 1990</td>
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<tr>
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<td>.4</td>
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</tr>
<tr>
<td>$Over $501 million</td>
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<tr>
<td>NUMBER OF EMPLOYEES</td>
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<tr>
<td>20 - 49</td>
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<td>GENDER OF RESPONDENT</td>
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<td>Male</td>
<td>75.7</td>
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<tr>
<td>Female</td>
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*Non responses have been excluded from this analysis.
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<th>MARITAL STATUS</th>
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<td>Single, previously married</td>
<td>11.1%</td>
<td>10.8%</td>
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<td>Single, never married</td>
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<td>6.5%</td>
<td>6.1%</td>
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<td>30 to 39 years old</td>
<td>32.3%</td>
<td>32.1%</td>
</tr>
<tr>
<td>40 to 49 years old</td>
<td>37.4%</td>
<td>37.3%</td>
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<tr>
<td>50 to 59 years old</td>
<td>18.7%</td>
<td>19.2%</td>
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<td>60 years or more</td>
<td>5.1%</td>
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<td>0.6%</td>
</tr>
<tr>
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<td>$100,000 or more</td>
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