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THE ROLE OF PERCEIVED RISK IN VENDOR SELECTION DECISIONS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

by

James R. McMillan, B.S.Ch.E., M.B.A.

* * * * *

The Ohio State University
1972

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CHAPTER I

Introduction

Industrial Vendor Selection Decisions

Industrial marketing is a pervasive and significant phenomenon in the United States. In dollar volume, sales to industrial customers are approximately 60 percent larger than all retail purchases. Yet there is a relative lack of scholarly attention being directed toward the particular problems of the industrial buying process. The simple fact is that there are but a few researchers today who are willing to tackle the rocky path of industrial marketing research. This concerns both the industrial marketing researcher and the practitioner who are seeking assistance in their efforts to better satisfy needs in the industrial marketplace.

Some research has been attempted, but all too often the variables selected have been economic price variables. These were long ago recognized by the consumer behavior researchers as being conceptually inadequate to explain buyer behavior by themselves.


Nowhere has this economic approach been more predominant than in the studies of vendor selection and evaluation.\(^4\) Certainly there have been exceptions but these have indeed been few.\(^5\) To advance industrial buyer behavior, a new emphasis is urgently needed—one which recognizes that the members of the industrial buying decisions are as much human beings as are their consumer counterparts.

In today's highly industrial environment where products and services are more and more objectively identical, the buying decisions are increasingly influenced by subjective or perceptual factors. It therefore is not surprising to discover that behavioral variables such as "good working relationship with suppliers" have been shown to be twice as important to the industrial buyer as is price.\(^6\) When it comes down to the final choice of one vendor over another, the key variables


are the buyer's attitudes and image of each supplier's quality, delivery, service, salesmen, etc.\footnote{Bertrand Klass, "What Factors Affect Industrial Buying Decisions?" \textit{Industrial Marketing} (May, 1961), p. 33.}

This recognition of behavioral variables is but a start. Conceptual models of buying behavior need to be solidly shored with empirical verification. An initial approach is to apply the findings for research on individual consumers and households. However, the utility of this consumer research for explaining industrial marketing behavior is not readily apparent. In industrial marketing, product performance and functional considerations predominate or at least are very instrumental. Although some consumer products are purchased largely on functional characteristics, many are not. Unfortunately most research efforts have focused on consumer products not having primarily functional characteristics.\footnote{Frederick E. Webster, Jr., "Industrial Buying Behavior: A State-of-the-Art Appraisal," in Bernard A. Morin (ed.), \textit{Marketing in a Changing World} (Chicago: American Marketing Assoc., 1969), pp. 254-260.}

Purpose

The purpose of this study was to further the understanding of why one industrial vendor is preferred by some firms and not others. Underlying this research was the supposition that the risks perceived by members of the buying firm toward the vendor may be influential in the vendor selection decision of the firm.

Intuitively, perceived risk will vary with both personal characteristics and the situation. Intuition needs to be combined

\footnote{Bertrand Klass, "What Factors Affect Industrial Buying Decisions?" \textit{Industrial Marketing} (May, 1961), p. 33.}
with more empirical evidence if we are really to understand why and when certain levels and types of risks are subjectively experienced. Thus, a more fundamental purpose was to ascertain the influence of organizational role position, personality, and experience related variables on the perception of risks by individuals.

Finally, by combining a better understanding of the determinants of perceived risk with the types and levels of perceived risk to be examined in this research, implications about the applicability of the perceived risk concept to industrial marketing tasks were developed. Specific applications include the choice of personal appeals, creative strategy in promotion, and product requirements.

Source of Data

Data for this research were made possible through the cooperation of a very large United States firm which is a substantial international competitor in the chemical intermediate field. The cooperating firm requested to remain anonymous.

A list of customers and prospective customers was provided for three chemical intermediate products fulfilling certain requirements. The firms on the list were distributed across the entire United States. Data were collected by mail questionnaire under the auspices of The Ohio State University Organizational Buying Behavior Group. Since an elaboration of the methodological details is discussed in a subsequent chapter, no further explication will be presented here.
Theoretical Questions

The framework for this research was predicated on several research questions. A brief discussion of each is presented here and an amplification is given in later chapters.

The first theoretical question concerned the ability of perceived risk to explain buyer behavior. Ever since Raymond A. Bauer presented a paper introducing the perceived risk concept, many researchers have been attracted by the intuitive appeal of this concept. Bauer proposed that a large portion of consumer behavior could be explained in terms of the amount of risk the consumer perceives to exist in a purchase decision. If the perceived risk was high, the consumer would try to reduce it. Examples of risk reduction mechanisms offered by Bauer included brand loyalty and the seeking of advice from advertising or personal friends. Given the intuitive appeal of perceived risk as an explanatory variable, the research results have not equalled the expectations. Consequently the first major theoretical question centered on the salience of perceived risk as a major influence on buyer behavior in industrial firms.


The second theoretical issue involved the relationship between perceived risk and self-confidence. It is a well-established notion that people vary in self-confidence and there is great appeal to the idea that consumer decision making is influenced by this variable. Two types of self-confidence have been studied. First is a generalized self-confidence which describes an individual's behavior across all situations, and second, specific self-confidence which refers to the degree of judgment certainty a person has with respect to a specific decision such as a product quality assessment. Although certain relationships between perceived risk and self-confidence are relatively conclusive, this area required further examination. Therefore, the second theoretical issue involves the relationship between perceived risk and self-confidence.

Situational influence is an established belief in the study of human behavior. In the research on perceived risk several situational variables have been examined including buy status, organizational role position, and product category. Although some success


13 Theodore Levitt, Industrial Purchasing Behavior: A Study of Communications Effects (Boston: Dir. of Research, Graduate School of Business Administration, Harvard University, 1965), pp. 41-60; see also Scott M. Cunningham, "The Major Dimensions of Perceived Risk," in Donald F. Cox (editor), Risk Taking and Information Handling in Consumer Behavior (Boston: Division of Research, Graduate School of Bus. Adm., Harvard University, 1967), pp. 82-88; and Spence, 107-152.
has been realized, the findings are far from conclusive and possibly some additional work-related variables may be required if progress is to be made. Thus, the final theoretical question was whether or not perceived risk is dependent upon the situation.

Research Objectives

In a generic sense, the objective of this study was to examine the theoretical questions and problems just outlined above. More precisely the research objectives were:

1. To ascertain if specified members of a firm buying from a particular vendor perceive the same types and levels of risks toward the supplying vendor as do members of a firm who buy from another source;

2. To examine the influence of role position on the type and level of risks perceived;

3. To examine the effect of product category on the type and level of risk perceived;

4. To determine the degree of association between specific and generalized self-confidence and the perception of risk; and

5. To analyze the relationship between work-related variables such as experience and responsibility on the perception of risk.

---

Limitations of the Study

The limitations of the research are implicit in the overview presented in this chapter and particularly in the research and theoretical questions. Several limitations are sufficiently salient to justify an explicit exposition.

The first major limitation is inherent in the fact that the data were not collected using a probability sample. Consequently, generalizations to the national population of firms purchasing or producing chemical intermediates cannot be made.

Second, the products studied were selected using specific criteria. Generalizations to products not meeting these criteria or having characteristics significantly different than those studied must be done only with considerable caution.

Finally, many definitions of perceived risk have been employed by various researchers. Comparisons of the results of this perceived risk research to others must be made on a direct basis only where identical definitions are utilized.

Summary

In this chapter an overview of the purpose, source of data, theoretical questions, research objectives, and limitations of this study was presented. Since the major concepts will be enlarged upon in subsequent chapters, the introductory exposition was quite condensed.

The next chapter will present a further elaboration of industrial marketing and vendor selection decisions.
CHAPTER II

Industrial Buyer Behavior

Introduction

The study of buyer behavior in industrial firms has focused largely on the selection of a vendor. Most of these vendor selection studies centered on the traditional variables of price, quality, delivery, and service. The human role in this selection process was largely ignored. More recently, the industrial buyer has been recognized as an important element because his purchase decisions are influenced by more than the traditional set of vendor selection variables. Each buyer views the buying process with a unique perceptual bias reflecting his own psychological map and the specific characteristics of the particular purchase under consideration. In this chapter the more significant studies of industrial buying are analyzed to show the development of the conceptual scheme used for this study.

Vendor Selection Theory

The problem of deciding why or how one specific vendor should be chosen from a number of competing sources has received substantial attention in the purchasing literature. Most of the theoretical approaches have actual performance data as their basis. This approach has considerable appeal in that industrial firms prefer to select
vendors with whom they have some experience. In situations where no experience is available for the selected supplier, the buying firm may place a "low risk" order such as a small quantity until actual performance data are generated.

The National Association of Purchasing Management in their Guide to Purchasing offer several approaches for selecting vendors. All are based on the requirement of historical performance data. Selected performance data such as quality, price, and delivery are combined in some manner to produce a composite score which becomes the basis for action.

One of the more popular plans is "Total Cost." Ideally, a finite cost should be affixed to every action relating to the product purchase. This would include much more than the simple sum of the purchase price and delivery charges. Other costs would include loss of production efficiency resulting from poor quality, quality control surveillance costs, etc. However, feasibility and practicality preclude the attainment of such an ideal solution.

Because quality is such a significant requirement in many industrial processes, a second popular plan is limited to the cost of quality. In its comprehensive format, this plan considers the cost of quality assurance for the purchased items. One cost is to prevent purchasing from improper sources. Another cost is to detect lots of

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16 Smith, Vol. 1, pp. 1.6.1-1.6.10.
unacceptable quality. Other costs are for inspection of manufactured goods and rejected production.

Another scheme for establishing vendor performance is the "Categorical Plan." Buyers keep continuous notes on their dealings with vendors. Then, at a group meeting, these cumulative records on each supplier are perused for the purpose of assigning a rank to each vendor. Effective results depend heavily upon the competence of the individuals using it. Advantages of this procedure include minimum amounts of data collection and simple analytical techniques.

The "Weighted-Point Plan" explicitly recognizes that the relative importance of variables such as price, quality, and service vary with the purchase situation. Weights are established for each of the factors deemed salient. Then these weights are multiplied by the respective performance data of a firm. The overall performance rating for that vendor is the sum of the products of weights times factors. Unfortunately no widely accepted theory has been developed to establish how these pertinent factors should be weighted relative to one another.

Thus, as one examines the purchasing literature for the proper approach to selection, it is evident that a satisfactory one has not been developed. Total cost has great theoretical appeal but little pragmatic utility. Instead of an approach, what one really finds is a long list of at least fifty distinct factors offered by various purchasing scholars as being instrumental to vendor selection decisions.

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17 Dickson, pp. 387-389.
Each scholar suggests about five to ten factors, but close examination discloses significant variance in the factors that are considered appropriate. However, complete confusion does not exist as most purchasing scholars would agree with the primacy of quality. In addition, general agreement can be found that service is more important than price. 18

Vendor Selection Practice

Vendor selection theory suggests that the source of supply should be chosen on the basis of objective historical performance data using a five to ten variable criteria set. Research on the actual practice of many purchasing firms suggests this theory is not often followed and, in fact, vendor selection is haphazard and very subjective.

Thain, Johnston, and Leighton found purchasers preferring subjective evaluation and ignoring factual data. Even the comparisons of relatively objective criteria such as price and specifications were influenced by the buyers' perceptual appraisals of intangible criteria such as reputation for friendliness and service. 19


Performance data, required by selection theory, are not available in all firms. In fact, one survey found that one-third of the firms kept no formal records of vendor performance for use in subsequent vendor selection decisions. Probably less than 20 percent of the U. S. firms have a selection system that is based on formal rating of past vendor performance.

Possibly the research by Brainard suggests the reason for the low occurrence of formalized procedures. He reports that one company employed ninety-nine items using evaluators who were mature, educated, and experienced. The formalized procedure was not successful as there was no significant difference in the quality of material supplied by vendors rated acceptable and those rated unacceptable.

It therefore is not so surprising to learn that factual data are being ignored in favor of subjective evaluation and most firms are not employing formalized rating systems. The results to date simply have not earned the confidence of the purchasing profession. New approaches are urgently needed, particularly those which recognize that the purchasing department is only one dimension of the decision center and that the members of the industrial buying decision are as much human beings as are their consumer counterparts.

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20 Dickson, p. 390.


approach centering on objective appraisals of price, quality, and
service has been largely abandoned as being ineffective. New directions
in practice must be preceded by a new conceptual foundation.

Conceptualization of Industrial Purchasing Decisions

Industrial buying behavior can best be conceptualized as decision
making in which both organizational and individual variables are para­
mount. Several people are involved including users, influencers, and
the members of the buying decision. Importantly, these industrial
buying decision makers are motivated by a combination of individual and
organizational needs.\textsuperscript{23}

Wind has demonstrated the applicability of the behavioral
theory of the firm, as developed by Cyert and March, to the study
of industrial purchasing. By assuming that Cyert and March's propo­
sitions regarding the firm in general are valid for the "buying center"
or the purchase decision, Wind was able to elucidate the complex
purchase process through an examination of each major proposition with
the empirical data available.\textsuperscript{24}

Conflict Resolution

The buying center is an adjunct to the purchasing department
and contains members from one or more departments other than purchasing.

\textsuperscript{23} Webster, p. 250.

As an interdepartmental decision making unit, the buying center is really an ad hoc coalition consisting of members with different goals. These differences emanate from both differences in personal characteristics and in role position. Because members of the buying center occupy different role positions within the firm, they look at the buying situation from different points of view. Scientists are typically concerned with the performance and quality of the products which they are building. Purchasing managers are interested in minimizing costs subject to satisfactory performance. The production manager is interested in the delivery of all the needed raw materials on schedule and thus has a temporal orientation.

Given this inevitable conflict of goals, the buying center reduces, or at least manages, this conflict in one of several ways. Several smaller decisions are necessary in each purchase or vendor selection decision. One approach is to utilize local rationality where the smaller decisions are distributed among the various members of the purchase decision. Another approach is to adopt a sequential procedure whereby one role occupant is satisfied on one decision aspect. Then the process continues to satisfy another role occupant on a later one. In all industrial purchasing decisions, the purchasing participants have a proclivity to employ a satisficing or acceptable level decision rule.

Yet another force is in effect. Even though the members of the buying decision occupy different firm positions and therefore view the situation differently, all have common management interests. All of
the buying influences identify themselves with the welfare of the company and believe their own personal goals can best be attained through achievement of company goals, although the cause and effect relationship is not simple. These men all recognize that individual performance within an organization certainly counts; however, it is not the only factor. Also important is the profitability level of the entire company operation. 25

**Uncertainty Management**

Members of the buying center approach the selection of a vendor with uncertainty. The most frequently experienced uncertainty involves the superior's analysis of the decisions, or as it is generally called, "superior phobia." 26 Many other dimensions of uncertainty exist and include product attributes such as quality, and vendor attributes such as delivery on time. The basis of this uncertainty is the lack of perfect information and the consequence is fear. Many types of fears are subjectively experienced, but include the fear of making a mistake, the fear of losing status with peers and superiors, and in extreme cases, even the fear of losing one's job. 27

Alleviation or management of uncertainty is achieved by several mechanisms. If a buyer is motivated to reduce or minimize uncertainty, 25 Lazo, p. 261.


27 Lazo, 265.
he can be expected to be loyal to reliable sources of the past and/or to split every order between two or more sources. Often he will employ a strategy of short-run decisions involving a short-run reaction to daily feedback information. Another mechanism, arranging a negotiated environment, is prevalent in industrial selling as is evidenced by the large occurrence of buying decisions where the buying center contained multiple membership. In fact, this multiple buying influence appears to be a normal situation in industrial marketing and is well documented in the literature. One study found that in more than 75 percent of industrial purchases, three or more people were influential in the decision.

**Information Search**

Throughout the industrial buying process, one or more of the decision makers engages in information search. Any search performed is stimulated by the recognition of a new problem and is directed specifically toward problem resolution. In other words, the search is motivated and the amount of information search conducted by the individual members will reflect their motivational level. Importantly, the purpose of information is to reduce the uncertainty of the decision outcomes. Every outcome has a consequence, but the industrial buyers

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have limited ability to adjust or reduce the impact of this consequence. Thus, risk management in industrial buying is largely concerned with reducing uncertainty through information search.

Two opposing forces affect the information search process. First is the pressure to minimize search resulting from large work loads, short project deadlines, and the ever-increasing management attention to cost minimization. The second force is the buying group's desire to reduce uncertainty and thereby increase the probability of the decision outcome to bring positive rewards to the individual members. With these diametric forces, it is not surprising to discover that the initial search is in the immediate environment for this is perceived to be the least expensive. Only if the localized search is not fruitful will a more extensive and expensive procedure be commenced.

Regardless of the search complexity, individual decision makers in industrial buying situations show responses to communication similar to those that have been found in other areas of communication research. Included in the responses observed are the "existence of source effect and the processes of selective attention, perception, and retention."

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32 Levitt, pp. 24-40.

33 Webster, p. 256.
The responses are a result of three different kinds of search bias:

1. "Bias reflecting special training or experience;
2. "Bias reflecting the interaction of hopes and expectations;
3. "Communication biases reflecting unresolved conflict within the organization."34

Learning Purchasing Strategies

Industrial purchasing strategies can be defined as "consistent patterns of supplier selection behavior."35 Each step in the decision process is directed, to some degree, by the buyer's past experience, (i.e., his learning). The result of this learning is consistency in purchasing behavior.

The behavioral theory of the firm states that

... when an organization discovers a solution to a problem by searching in a particular way, it will be more likely to search in that way in future problems of the same type. ... Thus, the order in which various alternative solutions to a problem are considered will change as the organization experiences success or failure with alternatives.36

Wind found overwhelming empirical support for this proposition among industrial buyers.37 Yet this is not so surprising. Tendencies

34 Robinson, Faris and Wind, Industrial Buying and Creative Marketing, p. 105.
to act or behave in certain ways are learned responses. People become programmed to think and behave in certain ways and do not have to face the difficulties of coping with strange or unfamiliar phenomena once an attitude or system of evaluative orientations is learned.\(^{38}\)

The Role Participants

As the conceptualization just presented demonstrates, the normal situation is to have several firm members involved in the purchase decision. The conceptual vehicle for studying the interdependence of the various firm members is the "buying center."\(^{39}\) For the purpose of this study, the buying center is defined as members of the organization having face-to-face contact with each other with respect to the purchase decision and who realize or perceive both an influence and a responsibility to the purchase decision. In this definition, the interpersonal relations among the members of the buying center are of prime importance to the buying decision while the members' relations with other organizational personnel are of lesser importance.

People become members of the buying center or vendor selection decision for one of two reasons. First, in the tradition of formal organizational theory, the responsibility and authority of the member's organizational position creates a formal stake for him in purchase decisions involving his domain. Second, in harmony with the behavioral


concept of authority, an individual can become a buying center member by possessing information critical to the decision. 40

Three role participants were of interest in this research—the purchasing agent, the scientist, and the manager. The more significant published studies of these role participants are discussed in the three sections which follow.

Purchasing Agent

The term purchasing agent, as used in this research, includes all purchasing department personnel regularly having personal interaction with the vendors' representatives and the other organizational members who are responsible for specific vendor selection decisions. In some industrial firms, these purchasing people may be referred to as buyers or senior buyers. More recently, the purchasing profession has tried to change its image from that of an agent, one who does business or acts for another, by adopting the term purchasing management. 41 Recognition is given in this research to the managerial functions of the purchasing department. However, the term purchasing agent, instead of purchasing manager or buyer, was selected as being more consistent with the current literature and titles used by industrial firms.

40Ibid., 122.

In assessing the importance of the purchasing agent or purchasing department relative to the other role occupants, one must examine the salience of the specific purchase and the degree to which management believes concise and lucid decision criteria should be established. Although there is no completely operational way to establish objective measures of importance for particular purchase decisions, Alderson's "power principle" provides some insight in that it argues that a firm will act in such a way as to preserve and enhance its ability to act in the future. If the outcome critically affects the firm's freedom of choice in the future, the buying decision may be made at a level in the organization above the purchasing agent. Many purchase decisions are not that critical and the purchasing agent is an influential voice.

Firms exhibit a natural tendency to routinize purchases that occur regularly. As routinization increases, the role of the purchasing agent increases at the expense of the other buying center members until the buyer thereby occupies the paramount position. He becomes the "gatekeeper" of the buying process.

As the "gatekeeper" concept suggests, the communication aspects of the purchasing agent are most important. Being the "gatekeeper" of communication processes, the purchasing agent is not easily circumvented by the vendor. As a blocking influence, his involvement may

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primarily be negative. His veto can be clear and direct, but it may be quite subtle. For these reasons, vendors try to keep a "friend in court" for they know that the purchasing agent can often influence the votes of the other decision members by the information he presents and the way in which he presents it.

Obviously, the role of the purchasing agent is quite complex. At times he must be an arbitrator or judge reconciling the internal requirements and personalities with the external situation. He is responsible for the maintenance of good relationships with suppliers and the assurance of long-range sources of supply. Simultaneously he must be the catalyzing force to generate alternative solutions to purchasing problems and to protect the cost structure of the firm. In a sense, the purchasing agent is a generalist among a group of specialists. Marketing, legal, finance, production, and design specialists are all involved to some degree in the procurement process. Integration of all these separate skills into a framework for meeting the firm's needs is, to a significant degree, the task of the purchasing agent.

Scientists

As was the case with the term purchasing agent, the term scientist is plagued with semantical difficulties. Functional taxonomies such as research scientist, plant engineers, production foreman, magnify the difficulty. For the purpose of this research, scientists are defined as people who have considerable education, formal or otherwise, in such areas as engineering, chemistry, physics and the natural sciences, and
who are currently abreast of the technical literature relative to their organizational assignment. Thus, scientists are those personnel who influence the purchase decision by commenting competently on technical parameters and who have a corresponding responsibility for the consequences of the decision outcome.

Except for the Scientific American Study, little has been learned about the importance of the scientist relative to the purchasing agent. In this study, as would be expected, the purchasing agents were found to participate in more purchase decisions than did scientists. The difference was not as pronounced as might be expected as the percentage was 67 to 43 in favor of the purchasing agent. The revealing finding was that the purchasing agent selected the vendor over three times as frequently as did the scientist. 44

Conclusions from this study must be tentative. Certainly, the role of the scientist is not well established. Yet, it seems entirely premature to suggest that the purchasing agent is three times as important as the scientist. More research is obviously needed, especially with respect to the role of the scientist in influencing the purchasing agent's decision. Some reconciliation is possible via an examination of the scientist's problem responsibility. As a frequent participant in purchase decisions, the scientist is primarily involved with determining a feasible set based on technical criteria or attributes.

If more than one firm can satisfy the feasible set, then the purchasing agent's influence becomes more important. In this proposition, the scientist's approval of a vendor is therefore a necessary but not sufficient condition for selection.

The generally accepted image of the scientist as the no-nonsense technical expert who makes completely objective decisions is inadequate for explaining industrial buying behavior. First of all, the feasible set is partly circumscribed by perceptual biases. Second, the decision to select one supplier from the crowd satisfying the feasible set is based largely on subjective technical factors. In fact, there are definite indications that scientists prefer large, well-known companies. The importance of company reputation may emanate from the better job of servicing or advertising often performed by these large firms. It may be that the scientist perceives a blame placed as much on him as on the supplier when problems with a new or risky vendor occur. Consequently, in minimizing his perceived risk, he favors vendors ostensibly having the best reputation.

Managers

Alderson's power principle provides insight into the organizational level at which the purchase decision will be made. The power principle, as applied to the purchase decision, suggests that the greater the probability that this decision will restrict future

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45 Lazo, 263.

46 Alderson and Green, 13.
freedom of choice for the organization, the higher will be the organizational level at which the purchase decision will be made.

As United States industrial firms have grown and the business environment has become increasingly competitive, management has been forced to spend less time on operational purchases and more on long-term planning. Often this is not recognized, and, as a result, top management's role in the purchase process is generally overstated. Top management can logically be expected to participate in the purchase process in the manner suggested by the power principle, and in those situations where top management possesses information not available to those at lower organizational levels. Thus the top level of management would often be active in new purchase situations where the consideration of new alternatives was of utmost importance.

In the bulk of purchases, top management plays no identifiable role in the purchase process, either as an active participant or as a reviewing authority. The impetus for the decision and the decision process per se all occur at the operational or first level of management. It is this type of purchase decision environment which was of interest in this research.

Buying Situation Characteristics

An amplifying exposition of the type of purchase environment selected for this study is in order. Part of the inherent complexity of researching industrial purchasing behavior is the unlimited number of situations which can be described. The traditional product or
market-oriented taxonomies have generally been found to be inadequate for industrial marketing researchers. Using such a classificatory scheme can lead one to conclude "quite similar decisions are being based upon an entirely different set of criteria with the result that the outcomes of the decision have considerable variation."^47

Frustrations such as this caused the Marketing Science Institute (MSI) to advance a different proposition. In their study, they discovered that product type, although important, was not nearly as important as industrial marketing and purchasing executives believe. After considerable empirical research, the authors argue that the really distinguishing characteristic of the buying situation is the newness of the problem and propose the following trichotomy--new task, modified rebuy, and straight rebuy.

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Newness of the buying situation refers to the degree of similarity between the current problem and past ones. Thus a major aspect of the new task buying situation is that the buying group is presented with a problem with which it has not dealt previously. Consequently, and of great influence to the buying procedure, the buying decision makers have little, if any, relevant experience. As information needs are maximum and the consideration of alternatives is important, this type of problem has a large probability of being solved at a high management level.

^47 Dickson, 172.

^48 Robinson, Faris and Wind, Industrial Buying and Creative Marketing, pp. 22-27. This section draws heavily on the MSI Study.
In contrast to the new task, the purchasing company has some relevant buying experience in all rebuy situations. Straight rebuys are highly routinized as the problem arises on a regular or recurring basis. Current and future decisions will largely reflect how current suppliers and products have performed in the past. With this emphasis on past experience, the difficult assignment faced by a new supplier in a straight rebuy situation is evident. The importance of this type of situation should not be overlooked, as it is the most prevalent one in industrial marketing.

Modified rebuy situations are located on the continuum between straight rebuy (habitual behavior and automatic reordering) and new task (complex decisions involving significant change from previous experience). Typically, the modified rebuy situation involves the consideration of new suppliers, items, or marketing services by buyers who have considerable relevant buying experience. A modified rebuy situation does not necessarily infer that a new source or new product will be purchased. The requirement is the serious consideration of alternative solutions.

This research centered on buying situations best characterized as straight or modified rebuy. This was necessary so that the buying center would contain the operational level of management—the scientist, the purchasing agent, and a manager at the low end of the hierarchial ladder.
Summary

The problems attendant with deciding why or how one specific vendor should be chosen from a number of competing sources have received substantial attention by people in the purchasing profession. From the purchasing literature it is possible to extract a long list of distinct factors or characteristics of vendor performance which are considered to be meaningful by various authors. Each authority focuses on approximately five to ten factors, but a perusal clearly shows that there is considerable variance with respect to the factors selected by the various authorities.

This disparity of opinion among purchasing scholars results from several reasons. Although industrial purchase decisions are influenced by several people in the firm, past research has not always attempted, or if attempted, has not always been successful in determining all the persons importantly involved and the factors considered relevant by them. Second, many researchers have focused on historical performance data, but these are generally not available. Even when available, their predictive value has been nil. Finally, much of the past research was predicated on the narrow concepts of a product as a physical entity and the buyer as a rational decision maker maximizing his monetary returns. This led to an emphasis on variables largely associated with price theory of economists.

New research directions are needed. What has often been referred to as inconsistent or irrational behavior by purchasing firms must be released from such normative connotations and redirected
research be initiated. The framework for this new research direction was begun in this chapter using the "buying center" and the "behavioral theory of the firm" as conceptual bases. It is time to recognize that industrial purchasers are as much human as their consumer counterparts. Insights are possible from consumer behavior research. In fact, it appears that the subjective experiences of individuals comprising the buying center have barely been touched upon and yet are an extremely fertile domain for furthering the understanding of the complex behavioral process in which one vendor is selected preferentially over another.
CHAPTER III

Risk Management in Industrial Purchase Decisions

Introduction

Industrial buying behavior can best be conceptualized as decision making in which both organizational and individual variables are inextricable. The same conceptualization applies to the consumer's purchases as he is influenced by various referent groups which are themselves organizations. The consumer's purchase is not an act at one point in time, but instead is a decision process, the complexity and duration of which is moderated by the purchase situation. With this fundamental similarity, the examination and interpretation of industrial purchasing phenomena in terms of consumer behavior knowledge appears to be a propitious path for exploratory research.

The Perceived Risk Concept

The idea that consumer buyer behavior might be better understood by examining the idea of perceived risk was first proposed by Bauer in 1960. He argued that all buyer behavior and, in fact, all decision making involved risk in the sense that any decision must be followed by consequences which could not be predicted with certainty at the time the decision was made. At all times, according to Bauer, the buyer, consciously or unconsciously, selects a course of action
which reduces or at least allows him to handle the risk which is perceived. 49

Bauer was most careful to emphasize that perceived risk and not risk per se is the proper concept. Risk, by some objective measure, is always present in a buying situation, but one or more members of the buying decision may not perceive any risk, or the members may perceive different risks. "If risk exists in the 'real world' and the individual does not perceive it, he cannot be influenced by it." 50

The evolution of the perceived risk concept was influenced greatly by the unified program of research at Harvard in the sixties. This research is presented in a collective volume, *Risk Taking and Information Handling in Consumer Behavior*, with Cox acting as a spokesman for Bauer and the other members of the group. In the introduction Cox, with the benefit of all the research findings, attempted to define their concept of perceived risk.

... in every buying situation, a consumer attempts to identify buying goals and to match these goals with product or brand offerings. Risk may often be perceived by the consumer as the result of one or more of the following factors:

1. She may be uncertain as to what her buying goals are. ...

2. The consumer may be uncertain as to which purchase (product, brand, model, style, size, etc.) will best match or satisfy acceptance levels of buying goals.

49 Bauer, p. 390.

50 Ibid., p. 395.
3. The consumer may perceive possible adverse consequences if the purchase is made (or is not made) and the result is a failure to satisfy her buying goals.\(^{51}\)

The conceptualization of perceived risk is fundamental to the assumption that all buyer behavior is goal oriented. According to Cox,

Consumer decision making is a form of problem solving activity in which a consumer attempts to identify product performance and psychosocial buying goals, to define gaps between goals and existing states, and to match these goals (or goal-state gaps) with product or brand offerings, all with a degree of perceived risk . . . which is tolerable and desirable to the consumer.\(^{52}\)

**Perceived Risk Definitions**

Little definitional accord has been achieved by the various perceived risk researchers. Importantly, even the unified program at Harvard was not able to achieve total harmony. Almost all researchers, past and present, agree that the proper risk for research is that which is subjectively perceived rather than that which is objectively defined. From this accord, the scholars diverge considerably. Therefore an examination of the published definitions is worthwhile.

Cox proposes that perceived risk is some unspecified function of two elements, uncertainty and consequences. Uncertainty may be in regard to the identification of the nature, acceptance levels, and

\(^{51}\) Donald F. Cox (editor), *Risk Taking and Information Handling in Consumer Behavior* (Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1967), pp. 5-6.

\(^{52}\) Ibid., p. 4.
importance of buying goals or be experienced in regard to matching of
goals with purchases. Consequences may relate to either of two types
of goals, performance and psychosocial. Performance goals focus on
how the product works, whereas psychosocial ones center on what the
decision maker thinks of himself, what others think of him, and the
money, time, and effort invested to attain these goals. When a high
value has been placed on a goal and considerable effort has been
invested in trying to achieve the goal, the failure to meet goal
acceptance levels will produce serious consequences. 53

Kogan and Wallach have suggested a similar concept of perceived
risk. According to their formulation, there are two somewhat different
facets: a "chance" aspect with a focus on probability; and a "danger"
dimension where the severity of the negative consequences is stressed. 54
Cunningham agrees with this two-component definition of perceived risk
and uses the terms adopted by Cox--uncertainty and consequences. 55
Further support of this paradigm is expressed by Cardozo in his study
of the applicability of the perceived risk concept to industrial
marketing. 56

53 Ibid., pp. 6-7.
54 Nathan Kogan, Michael A. Wallach, Risk Taking, A Study in
Cognition and Personality (New York: Holt, Rinehart and Winston,
55 Scott M. Cunningham, "The Major Dimensions of Perceived
Risk," in Donald F. Cox (ed.), Risk Taking and Information Handling
in Consumer Behavior (Boston: Division of Research, Graduate School
of Business Administration, Harvard University, 1967), pp. 84-86.
Research involving this model has, in general, attempted to measure perceived risk by asking two questions, one relating to the uncertainty component and the other relating to the consequence. The uncertainty component is scaled in four or more points from "very certain" to "almost never certain" and the consequences similarly scaled from "very important" to "not very important." Typically researchers have combined the two scales in some arbitrary manner to obtain a measure of perceived risk with a multiplicative model being preferred. 57

Universal acceptance of this definition has not been realized. Venkatesan and Sheth argue that this two-component definition is limited to studies measuring perceived risk at one point in time. For this reason, they argue that the two-component definition is limited to one-time surveys of current buying behavior. In their opinion, one-time surveys are not the most efficacious method for increasing our knowledge of buyer behavior. Consequently they direct their attention to repetitive buying behavior and the risk reduction processes that occur over time. 58

In the experiment reported by Venkatesan and Sheth, only the uncertainty component was employed to study risk reduction processes. A rather direct definitional instruction was given to the participants:

57 Ibid., p. 436; see also Cunningham, pp. 84-86.

Given below are a list of personal care products, with which you are familiar. For each product, please indicate the degree of risk you feel you may associate with its use. By risk, we mean the uncertainty about using an unfamiliar brand, which may sometimes result in differing degrees of unpleasant and perhaps grave physical, personal, or social consequences.  

Other researchers have also adopted the uncertainty component as the desired research framework. Spence was influenced by the usage of the terms risk and uncertainty in the insurance field and in decision theory. Risk to scholars in these fields infers a known probability of an event while uncertainty infers an unknown probability. Rather than clutter the terminological jungle further, Spence equated perceived risk to subjective uncertainty by defining perceived risk as "... the amount of risk an individual says that he feels or sees to exist in a given act or object." Spence further supported this definition by referring to the fact that perceived risk should be approached with a global view as psychologists view perception as a broad organizing concept. Brown, using basically the same arguments as Spence, examined only the uncertainty aspect. Perceived risk, as he saw it, was "... the certainty a consumer sees or feels as to whether an untried brand of headache and pain, and/or cold remedy will work as well as and have the same side effects as his presently used brand."  

59 Ibid., pp. 48-52.  
61 Ibid., pp. 48-52.  
62 Brown, p. 49.
According to the global interpretation of perception, a buyer automatically organizes both his understanding of the importance of the event and the uncertainty of his knowledge about the probability of occurrence of the event into one encompassing evaluation. Any verbalization by the buyer about his perceived uncertainty of the consequences of an event will, in fact, be a realistic measure of his perceived risk.

Further support is available for the global or one-component model. To a large degree, marketers are interested in their ability to change the buyer's perception of their offering to a more favorable stance. Of the two perceived risk dimensions, uncertainty and consequence (or danger or importance), the consequence component appears to be less susceptible to the marketer's manipulation. It is largely immutable in that it is related to the buyer's goals and, as such, is related to his motives which are highly resistant to change. In contrast, uncertainty is much more mutable, generally through communication processes. Indeed Cox argues that "risk handling is largely concerned with dealing with uncertainty, that is, with information handling." Consumers perceiving high risk toward a product category are very likely to seek information to reduce their

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64 Cox, Risk Taking and Information Handling, p. 10.
risk. This view agrees with the notion that buying behavior is best viewed as decision making and information is a basic requirement in the decision process.

Cunningham cogently argues against the intuitive appeal of the uncertainty model. After obtaining both uncertainty and importance measures, he analyzed for independence and concluded that they were "relatively independent dimensions." Also, he found evidence to suggest that the importance component "may be weighed more heavily than is the certainty component." These two empirical findings are not easily ignored.

Given the controversy over perceived risk definitions, an obvious direction for this research was to utilize both the one-component and two-component constructs. Importantly, any research designed to employ the two-component method contains the other method.

With this research direction, uncertainty is best defined as the person's subjective probability that a given event will occur. Consequences are complex, but to be operational it is necessary to limit these to those costs incurred by a member of the buying decision, given the occurrence of the event. In this context, with the goals of the firm not a per se consideration, the buyer's consequences are related to his economic and psychosocial goals. Psychosocial goals, it may be recalled, relate to what the buyer thinks of himself and

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65 Ibid., p. 615.
67 Ibid., p. 86.
what others, including those not in his organization, think of him. As psychosocial goals obviously have economic components, this dichotomy cannot be complete. However, it conveys well the important idea that the industrial buyer is not the economic man once believed. He desires to emulate other persons or groups as well as enter into problem solving situations.

Perceived Risk Research

As the review of the literature demonstrates, perceived risk does not have a well-cemented meaning. This lack of definitional harmony is of immediate concern as it handicaps the comparison of the research findings now available. A further concern involves the failure of perceived risk to match expectations. Although there is considerable intuitive appeal to the thesis that decision making involves the weighing of the alternatives in terms of their desirabilities and subjective likelihoods, the research findings have often been disappointing.

Variance with Product Category

Although it is generally assumed that buyers do perceive risk in their purchases, there is actually little direct evidence in the literature to support it. Cunningham, in one of the early studies involving the perceived risk concept, showed that consumers are able to recognize risk in the purchase of products. In addition, he was able to prove that the perception of risk varied both with the individuals and product category.
The Cunningham study was based on three products which were expected to encompass a range of risk perception. In order of expected level of risk, the product categories were headache remedy, fabric softener, and dry spaghetti. Two findings are important. First, the products varied from low risk to high risk as was predicted. The percentage of people perceiving high risk for headache remedies was higher than for the other two categories, and the percentage perceiving high risk for fabric softeners was higher than that for spaghetti. Similarly, the dry spaghetti category was viewed by more people as being lower risk than the other two product categories. Or as Table 3.1 demonstrates, the product categories varied in risk from low to high. Second, none of these products were really considered to be high risk.

Table 3.1
Perceived Risk Variance with Product Category

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Perception of Risk by Product Categories</th>
<th>Percent of Users Classified as</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High Risk</td>
</tr>
<tr>
<td>Headache Remedies</td>
<td>23.7</td>
<td>35.6</td>
</tr>
<tr>
<td>Fabric Softener</td>
<td>6.1</td>
<td>34.0</td>
</tr>
<tr>
<td>Dry Spaghetti</td>
<td>1.2</td>
<td>22.8</td>
</tr>
</tbody>
</table>


In Table 3.1, it can be seen that, irrespective of the product category, there were more respondents in the low perceived group than in either
of the other two risk categories. If a product were truly high risk, one would expect the most respondents in the high perceived risk group.

These findings imply a product-specific nature for perceived risk. In addition, the relative independence found for the two perceived risk components, uncertainty and consequences, suggests that they can be best understood in terms of the specific product category involved.68

Before leaving this research study by Cunningham, it is necessary to stress a word of caution. There is indeed a crucial distinction between consumers' perception of risk as shown by Table 3.1 and the placement by the researcher of a product along a risk continuum relative to other points. On a perceived risk continuum, it is possible to locate these three products with the data contained in this table. Placement prior to having research findings cannot be justified at all. Therefore, as an additional point, note the continuum inferred in Table 3.1 is one of perceived risk and not objective or actual risk.

Ideally, perceived risk experiments would be based on product categories or other variables varying in objective levels of risk. This cannot be accomplished although researchers have attempted laudable approximations. Cardozo and Cagley in a buying game to study industrial purchasing behavior, attempted to vary the amount of objective risk at two levels by using (1) the total dollar value of the

68 Cunningham, pp. 84-86.
requisition, (2) the complexity of the purchased commodity, and (3) the visibility and consequences of choosing an unacceptable supplier. Another attempt to manipulate risk involved an experiment with hair spray. The authors assumed that unknown hair spray would cause more perceived risk than would nationally known brands. Thus, this research appears to be founded on an assessment by the authors that unknown and known brands of hair spray differ in objective risk. These two operational definitions of objective risk have no theoretical justification and point to the nemesis of perceived risk research. There is no justifiable method by which the purchase situation can be systematically varied in terms of objective measures of risk.

An important implication of another aspect of Cunningham's research is sometimes overlooked. Certainly adequate recognition has been given to his finding that the level of perceived risk varied with product category. Less interest has been shown in his finding that the type of risk which is perceived also varies with the product category. Risk type or risk content, as Cunningham referred to it, would include risks perceived toward social, financial, health, and other variables. He found that the type of risk perceived varied rather specifically with the product category. Although this appears to have significant


research ramifications, little has been done with the lead. Possibly, the impact of this result has been weakened somewhat by his failure to give it more attention in either the experimental design or the analysis.

Certainly Cardozo agrees with the premise that the type of risk perceived influences the purchasing strategy employed. In some situations the buying center may be interested in reducing the risk of late delivery, while in others price increases may be the paramount risk. Each specific risk perceived will have a correspondingly specific and possibly unique management strategy. If, for example, the buying center perceives a high risk for supply interruption from the current source, a new source or a multiple source strategy may be employed.

**Relationship to Brand or Vendor Loyalty**

A concept near and dear to most marketing students is brand or vendor loyalty. Equally familiar with the term are marketing practitioners as virtually every marketing plan has, as one of its high priority goals, the objective of encouraging current customers to buy the brand regularly. The concept of brand lethargy has been suggested as an important determinant of brand loyalty. Suggested by this notion is that a certain amount of effort is requisite to change brands and that one simply may not be willing to undergo the effort—i.e., the reward does not exceed the cost or the risk experienced.

Inasmuch as loyalty to one brand or vendor is a method of risk reduction, a plausible supposition is that people perceiving high
risk should also be high in brand loyalty. Research findings, although meager, appear to support this tentative statement. According to Cardozo, when perceived risk is high, the buying center perceives great differentiation among suppliers and there is more reluctance to switch suppliers than in low risk situations. This is true in spite of the fact that more effort will be spent in information search activities and the considering of alternatives. The simple truth is that successful suppliers of the past and present will be given preferential treatment. There is perhaps an even higher likelihood that the suppliers considered in most high risk situations will be those with whom the company has previously done business.\(^\text{71}\)

Using perceived brand commitment instead of purchase behavior, Cunningham examined the relationship between brand loyalty and perceived risk. Cunningham claimed that perceived risk was conclusively related to perceived brand commitment. Specifically, he found that for products low in perceived risk, brand loyalty was not so important. However, with high perceived risk products, large percentages of the respondents had strong brand commitment.\(^\text{72}\)

However, the relationship between perceived risk and brand loyalty is not a simple one. As Cunningham acknowledges,

\(^{71}\) Cardozo, p. 436.

High perceived risk consumers do not behave as if they were in a 'brand loyalty straitjacket.' When it seems sensible to do so (in search of a better brand) they will buy a new brand--after an appropriate cautionary period. If the new brand doesn't pan out, they revert to established brands. When the market is stable (in the absence of new brands) they are more likely to remain loyal.73

Arndt, in a study of housewives' purchases of a new brand of regular coffee, confirmed the fact that perceived risk was positively associated with a high degree of brand loyalty. In turn, there was a negative relationship between perceived risk and acceptance of the new brand.74

Brown was not to conclude so positively with respect to brand loyalty.75 Following the work of Sherif,76 Brown examined the hypothesis that "if higher perceived risk is found to be associated with wider latitudes of rejection and narrower latitudes of acceptance, it follows that perceived risk may be a factor underlying the establishment of brand loyalty." Empirical support was found for two product categories, but not for a third category. What complicates the issue in Brown's research is the lack of correlation of perceived risk with brand commitment for the product he considers to have the highest

73Ibid., p. 523.


75 Brown, p. 237.

perceived risk. Had this poor association occurred with the low risk product, reconciliation with the previously reported studies of Cunningham and Arndt would be much easier.  

**Situational Influence**

In one of the early perceived risk studies, Cox and Rich researched the relationship between two purchase situations, purchase by telephone and store purchasing, and perceived risk. They found that perceived risk was a major behavioral determinant in a woman's decision to shop by telephone. The majority of women do not shop by telephone, and the most frequent reason cited is a fear of not getting what was desired. The perception of risk was product specific so that a particular purchaser may order one kind of merchandise but not another. Basically, when the perceived risk was too high, this mode of shopping was avoided.

Note that the Cox and Rich study did not attempt to discover if the amount of risk perceived in telephone shopping was greater than in buying from a store in person. Their objective was to establish if high risk perceivers were less likely to shop by phone than were low risk perceivers.

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77 Brown, pp. 237-240.

In his doctoral dissertation, Spence addressed himself directly to the situational influence on perceived risk that was left largely unanswered by the Cox and Rich study. Spence attempted to discover if differences in the way in which people perceive risk in buying situations could account for differences in buying behavior. Two buying situations, purchase by mail and purchase from a store (or salesman), were examined. Life insurance was the product of interest. The population consisted of people who had purchased hospitalization insurance by mail from a particular company, a second group (prospect) who had been offered the same plan but had not purchased, and a third group of people (control) not in either of the other two groups.79

Support could not be found for the major hypothesis that people in general perceive more risk in the act of buying by mail than from a store or salesman. Another unsupported hypothesis was that the prospect group (non-buyers) would perceive a greater difference in the risk involved in the act of purchasing hospitalization insurance by mail as opposed to buying it from a store or salesman than would the group which had purchased. The failure of this research to find differences in perceived risk between buyers and non-buyers of hospitalization insurance is disappointing and difficult to explain.80 As with so much research, the Spence perceived risk instrument was much different from the one used by Cox and Rich. Hence the comparison of these

80 Ibid., p. 206.
two studies is difficult and, of course, the research objectives were quite dissimilar. However, as Spence so aptly concluded, "additional research is needed before one may safely conclude that the situational influence is not of importance." 81

**Individual Characteristics**

In theory, individual characteristics such as personality and task related experience play a prominent role in the perceptual processes of people and therefore must be an important determinant of risk perception in purchase decisions and other consumer behavior processes. Personality is a term used in many ways. A useful concept is to consider personality as referring to the individual's characteristics which determine general patterns of behavior. Thus, in the view of Engel, Kollat, and Blackwell, personality can be thought of as encompassing both motives and response traits. Motives are stable dispositions to behave in a manner which will result in the attainment of a specific goal such as achievement or affiliation. Response traits are characteristic modes of reacting and behaving that each person acquires in the process of striving to satisfy aroused needs or drives. Exemplifying response traits are dominance, independence, and exhibitionism. 82

According to the modern view of consumer behavior, individual characteristics such as personality and problem solving experience interact with the characteristics of the purchase situation to influence

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81 Ibid., p. 206.
82 Engel, Kollat, Blackwell, pp. 61-70.
buyer behavior. Many individual characteristics have been studied in an attempt to understand risk perception and the consumer behavior process. Notwithstanding the intuitive appeal of such variables, the research findings are not particularly encouraging as is apparent in the review of the literature which follows.

Desire for Certainty and Tolerance for Ambiguity

Intolerance of ambiguity is a generalized personality characteristic by which people... consistently differ in their capacity to tolerate or cope with ambiguous or unstructured objects and events. A person who is high in intolerance of ambiguity will tend to engage in black-and-white thinking and to form simplex, clearly organized cognitive systems.

Using an instrument developed by Brim for measuring individual's desires for certainty as given by their tolerance for ambiguity, Spence researched the relationship between perceived risk and desire for certainty. Specifically, he found that he could not support the hypothesis that persons with a lower desire for certainty would perceive less risk in the act of purchasing than persons who have a high desire for certainty.

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86 Spence, p. 160.
Contradictory results have been reported by Cardozo. In his preliminary findings of a research program into industrial buyer behavior, he found that this personality disposition is an important determinant of buying behavior.

A buyer who has a low tolerance for uncertainty would be more likely than one with higher tolerance for uncertainty to rely on suppliers who had served him well in the past; he would probably be less likely to switch suppliers than would a buyer with high tolerance for uncertainty. The buyer with low tolerance for uncertainty would be more likely to employ "a sequential evaluation" strategy than a "simultaneous scanning" strategy.87

Although Cardozo's initial findings are more in line with intuitive appeal, they must be viewed as preliminary.

**Internal versus External Control of Reinforcement**

An individual who perceives that rewarding or punishing events are generally independent of his own action is said to believe in external control of reinforcement. Similarly, if a person considers the results to be contingent upon his own behavior or his relatively permanent characteristics such as intelligence or ingenuity, he is a believer in internal control of reinforcement.88 The internal-external instrument attempts to establish the "general feeling that one is either more of an active, causal agent or more of a passive recipient of effects in dealing with one's environment."89

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89 Kogan and Wallach, p. 22.
The relevance of internal and external control of reinforcement was posited by Lazo in 1960 when he commented about the apparent high beliefs in external control possessed by the industrial buyers. "These men all realize that it is not individual performance within an organization that counts, but the total profitable operation of the company as a whole." Yet the issue was not entirely conclusive as Lazo recognized in writing that "almost to a man they recognized . . . that their own acts contributed to their companies' ability to compete successfully." 90

In a gambling context, Liverant and Scodel found that a penchant for internal control contributed to lower levels of risk taking and to less variability in the choice of decision alternatives. 91 This finding, conservatism associated with high internal control of reinforcement, was examined by Brown in a purchase situation. He hypothesized that people with a high degree of internal control would perceive less risk in the purchases of headache, pain, and cold remedies than people with a high degree of external control. 92 However, the hypothesized association of perceived risk with the internal-external variable was not found. 93

90 Lazo, p. 261.
92 Brown, p. 89.
93 Ibid., pp. 231-248.
Self-Confidence

It is a well-established notion that people vary in self-confidence. As a generalized personality characteristic, self-confidence has most often been studied with respect to persuasibility. Of more relevance to this study is the relationship between self-confidence and decision making.

Evidence is available to argue that a woman's generalized self-confidence influences her decision-making process. Women of very high generalized self-confidence have been considered to be best equipped to cope with the uncertainty of decisions facing them. Thus there is little tendency to remain committed to a generalized risk style which implies the capability of choosing a risk orientation best suited for the problem at hand. From this perspective, women of high general self-confidence would exhibit a variable risk style. Barach examined this proposition using an ad hoc index based on preference for errors of omission and commission, and concluded it was valid.

Levitt examined the relationship between self-confidence and risk in a laboratory setting. Comparison with other research findings


is difficult because the way that Levitt determined risk and self-confidence is different than those more often employed. The subjects were exposed to a film and then asked to make decisions. For one group the decision was whether or not they would recommend the product to another (low risk) and the second group had to decide whether they would or would not adopt the product (high risk). Self-confidence was measured by asking the respondent to indicate the strength of their convictions incident to these decisions. In low-risk situations self-confidence was high. Furthermore, the self-confidence was about the same for those changing brands (adopting) as well as those not changing. In the high risk situations, self-confidence was lower than in the low-risk situations. In addition, the self-confidence of those with brand loyalty was higher than those who had decided to adopt a new source.  

So far, only generalized self-confidence has been examined. This type of self-confidence refers to an individual's behavior across all situations. Another relevant self-confidence concept, specific self-confidence, refers to the degree of certainty of judgment which a person has for a particular situation. Even though one individual may consistently or regularly have a greater (smaller) self-confidence than another, it is normal for any individual to have varying degrees of self-confidence with respect to different situations.  

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97 Levitt, p. 170.

that the buyer has a number of evaluatory dimensions such as price, delivery, quality, and service. The buyer will judge these various dimensions with different levels of confidence. He may judge price with high self-confidence, but have little self-confidence toward his assessment of quality. In contrast, the scientist may be very confident in judging quality, but extremely uncertain of his price judgments.

While relationships between perceived risk, self-confidence, and product related discussions appear to be relatively conclusive, the relationship between perceived risk and self-confidence needs further examination. Any further research should try to incorporate the preliminary results obtained by Cardozo. He has found that a buyer's specific self-confidence may be related to the degree of influence he exercises in the purchasing process. In examining the buyer's self-confidence to choose acceptable suppliers from the set of all potential ones and to negotiate the supply contract, Cardozo found that high self-confidence in these two specific tasks was correlated with high influence for the buyer.

Information seeking, according to Cardozo, is also related to specific self-confidence. Both buyers who are highly confident or have little confidence may be hesitant to seek or accept any information from salesmen or other sponsored sources such as advertising. In contrast, the buyer with medium confidence appears to be willing to seek outside information and, in general, spend more time and effort

\[\text{Cunningham, "Perceived Risk in Communication," p. 287.}\]
in evaluating the entire set of potential suppliers. To the extent that these tentative findings are substantiated by subsequent research, it appears that suppliers who are currently "out" should concentrate their efforts on the buying center members having medium self-confidence for that specific purchase situation.

Relationship to Role Position

The a priori argument has been made that purchase processes, consumer or industrial, can be viewed as the recognition and handling of risks. In addition, much of the psychological literature utilizes the idea that risk taking is a generalized personality tendency and that certain people can be classified as risk seekers and others as risk avoiders.

The relationship between one's "risk style" and his perception of risk is yet unknown. Thus, we do not know whether a risk seeker perceives high risk or perceives low risk in a specific purchase situation. A risk seeker may actually perceive a low risk in a situation where an objective assessment would define it as high risk. Interestingly enough, if this happened, the risk seeker would not really be a risk seeker in his own mind as he perceived little risk in his decision. However, the high risk taker may correctly perceive that the risks were indeed high, but believing his decision abilities to be superior leads him to choose a high risk alternative. Unfortunately this issue has been largely ignored by researchers. From a

limited amount of research, it seems reasonable to expect interpersonal
differences in risk perception. Specifically it has been found that a
number of people typically perceive high risk (or typically perceive no
risk) over a wide range of product categories.

The fact that some buying decision members consistently per­
ceive a given level of risk for specific dimensions of the vendor's
offer is important to the industrial marketer.

Some buyers consistently perceive as high the risk of not
obtaining delivery on schedule, while others regularly regard
paying a premium price as a high risk. . . . These differ­
ences in consistent perceptions of which risks are high and
which are low appear to be related to buyers' education and
experience, e.g. a buyer with an engineering degree and
quality control experience typically considers as high the
risks of failing to meet design specifications and supplying
lots which vary in percent defectives.102

As the individual's experience and role change with time and
the purchase situation, it is imperative that the industrial marketer
avoid stereotyping any member of the purchasing department or buying
center as a "typical buyer." An engineer promoted to manager may
become more concerned with innovativeness of the supplier than
before, or a buyer promoted to purchasing agent may start to perceive
greater risks concerning interruption of supply. Although the role
position does decidedly influence the importance associated with
certain variables, the industrial marketer must realize that this
focus offers only the beginning clues as to the proper promotional
effort to enhance his product's chances.

101 Cunningham, "The Major Dimensions of Perceived Risk,"

The relationship of role position and the effect of perceived risk was explored by Levitt using a laboratory communication experiment. In the purchase of complex industrial goods, where the perceived risk was low, the scientists were influenced more by the quality of the sales presentation than were purchasing agents. However, with high risk situations, the opposite was true. As the risk increased, there was less of a communication effect for the scientists because they tended to rely on their own technical assessment of the new product's virtues rather than on the quality of the sales presentation. In contrast, purchasing agents, seemingly forced by their lower technical sophistication, relied heavily on the quality of the vendor's presentation in high risk situations. 103

Group Decisions and Riskiness Shift

Industrial purchase decisions were conceptualized as group decision making in which both individual and corporate goals are paramount. Because the purchase is a group decision, the risk perceived and/or decided upon by the group may be significantly different than that experienced by some of the buying center members. Little attention has been given to this thought by the researchers of perceived risk.

A warning is necessary at the outset. Much of the literature on risk taking in group decision making has not recognized that the group's influence can produce a shift toward more or less risk. Much early research failed to provide a mechanism to study shifts to

103 Levitt, pp. 27-28.
conservatism, and conclusions such as the one expressed by Kogan and Wallach typify the early findings. "If members of a group engage in a discussion in which a consensus is reached regarding the degree of risk to accept in the decisions they make, their conclusion is to pursue a course of action more risky than that represented by the average of the prior decisions of each individual considered separately." Actually, the consensus requirement was not necessary, but the occurrence of a group discussion is both necessary and sufficient for generating the shift to higher risk. In view of the weakness of the typical methodology, equally plausible explanations of the effect of group discussion are (a) "that there would be a shift toward the average of the individual opinions of the members when a group consensus was reached, or (b) that the group would move toward greater conservatism when required to arrive at a consensus through discussion." 

The possibility of a shift to conservatism was examined by Brown. Citing a study by Nordhay, where it was found for certain types of problems, group decision produced a shift to more conservative decisions, Brown argues that the nature of the problem is most important in determining whether a value on caution or a value on risk taking is engaged. "The group decision will be more extreme than the

\[104\] Kogan and Wallach, p. 1.

individual decision—in the direction of the value engaged, whichever that direction may be. ¹⁰⁶

Brown argues that there are two reasons for this extremity shift. First, the value engaged, caution or high risk, will influence the information flow so that more relevant information will be elicited supporting the selected value than opposing it. The group leadership seems to fall to the one who is disposed to go the way the group is going, and the hypothesis that high risk takers are the most influential can be discarded. In decisions where the caution value was engaged, the more influential members were those who had initially been relatively cautious. Second, it has been well documented that on problems which engage the value of high risk, each individual before the group discussion thinks himself at least as high a risk taker as the average decision maker. However, during the group discussion it becomes obvious to certain persons that their risk taking propensity is below the group average since everyone thought he was above the average. Since those below the average are not living up to their own expectation, they change to higher risk decisions. The reverse process works in situations where the caution value is engaged. Individuals, prior to group discussion, would guess that other decision members would adopt a less cautious decision than themselves. But as the discussion develops, those who are really selecting higher risk

alternatives than the average will recognize this and therefore change to a more cautious or conservative selection. 107

The value of this information is difficult to assess. There is no theory or general rule for predicting in advance those problems which will produce a shift to high risk or those problems which will produce a shift to caution. Underlying this conclusion is the implicit idea that regardless of the direction of the shift, the individual who is in doubt as to what position to take does perceive risks. In choosing a position of greater extremity than he would have selected individually, does the decision maker perceive more risk? This is doubtful because of a perceived, if not actual, sharing or diffusion of responsibility which accompanies group decisions. It may be that when one individual has complete responsibility for a decision he is afraid to select an extreme position and thereby risk the attendant bad consequences. When several people share this responsibility, the individual decision maker is less fearful. 108 This proposition has not gone unchallenged, and thus more research is needed before conclusive remarks are possible. 109 However, in view of the group nature of vendor selection decisions, the importance of research in this area to industrial marketing should not be overlooked.

107 Ibid., p. 706.
109 Roger Brown, p. 660.
Recapitulation

This chapter has built on the foundation established earlier that the members of the buying center are as much human in their work-related purchases as they are in their purchases for personal consumption. Each of their purchases, work or personal, is surrounded by a certain amount of subjectively experienced risk caused by a lack of perfect knowledge. The great intuitive appeal of the idea that all purchasing behavior, industrial or consumer, may be studied by the concept of perceived risk has led to considerable research.

Notwithstanding the amount of research that has been conducted and the studies that are in progress, there is much left to be learned about perceived risk, particularly its underlying determinants and its possible prediction of buying behavior. Success to date, as the literature review presented has clearly demonstrated, has been fragmentary.

The treatment given to the research findings extant has provided a theoretical perspective to accompany the industrial purchasing conceptualization developed in the previous chapter. It is upon this theoretical structure that this research will build using the variables found productive by other researchers and following the implications developed in this paper. In the following chapter, attention is directed to the research methodology.
CHAPTER IV

Methodology

Introduction

The two preceding chapters examined the theoretical aspects of industrial marketing including the management of risks perceived in purchase decisions. Attention is now directed to the specific methodology of this study. The first discussion focuses on the perceived risk models employed. Following this is a further amplification of the study including an explanation of the variables being researched, the research hypotheses, and the research instruments.

Perceived Risk Paradigms

Since there is not a universally accepted definition or model of perceived risk, this research used three different models. This procedure permitted a comparison of their relative abilities to predict buyer behavior.

First, recognizing the arguments of some scholars for the uncertainty model of perceived risk, one model was based solely on it. Next, in concordance with the view that perceived risk is a combination of uncertainty and importance, two more models—additive and multiplicative—were included in the research design.

In the additive model, the uncertainty and importance components were added. Similarly, in the multiplicative model, these two...
components were multiplied. Thus for both the additive and multiplicative models, the following assumptions were necessary: (1) both the certainty and importance components should be equally weighted, and (2) the gradations are spaced equally on both scales with the distance between each gradation the same on each component scale.  

Research Variables

Risk Content Variables

When a buyer evaluates the offer of a selling firm, he is usually concerned with several features of the offer. Rarely is the purchase decision made on the basis of a single feature. As an example, he may consider quality, cost, and past delivery performance. To the extent that the buyer believes these features to be independent, he gives each an independent rating. In this research, these individual ratings for quality, cost, etc., are referred to as types of risk or specific risk contents.

The level of risk perceived has been shown to vary with the risk content. Yet, little research has systematically examined the effect of risk content on the level of risk perceived, but instead has focused on a more global assessment. The argument for this research orientation is that the psychologists view perception as a broad organizing concept permitting a consolidation of many diverse elements into an overall rating.

The minimal success to date with the global interpretation of perceived risk suggests that a more limited view may be needed. Most previous research frameworks forced the buyer to encapsulate all of his discrete thoughts about the product, the salesman, and supplying company into one synoptic assessment. Possibly, this type of framework was too broad. Probably the buyer does differentiate the offer into several dimensions. Much of the purchasing literature suggests that this is true. Thus this research was designed to examine several types of risk.

Sixteen specific risk content categories were selected from the purchasing literature. These are presented in Figure 4.1. Four of them involve the product, four the salesman, and eight the company. The examination of these specific risk content variables is a major innovation in perceived risk research.

It seems senseless, at this point in our knowledge to dissect product, company, and salesman characteristics even further to attempt identification of the components of quality, cost, performance, etc. Each decision maker, in a global process of organizing his map of the supplying set, can probably express, or at least understand, his perception of the quality of the sources in the set. Very grave doubt exists concerning his ability to articulate his perceived differences of the components of quality. Thus, high quality is high quality and high cost is high cost for whatever reasons the decision maker may choose. The actual reasons are beyond the scope of this study and no attempt is made to decompose the specific risk types listed in Figure 4.1 under product, company and salesman characteristics.
Figure 4.1

Risk Content Variables

Product Variables

- Total Cost
- Performance
- Quality
- Quality Consistency

Salesman Variables

- Honesty
- Dependability of Promises
- Competency
- Effectiveness

Company Variables

- Ability to Deliver on Schedule
- Service
- Innovative Nature
- Dependability of Promises
- Capability of Supplying Future Demand
- Reciprocity
- Technical Capability
- Emergency Assistance

Overall Rating

Given the global nature of perception and the number of marketing scholars who argue for the global approach to perceived risk, it seemed appropriate to include global measures in this study. Certainly there is a basis for arguing that a buyer may not refine his risk perceptions as finely as is suggested by Figure 4.1. An industrial buyer may perceive that vendor "A" has a better product than vendor "B." Yet, the buyer may have a most difficult time rating "A" and "B" on each of the four product content variables—total cost, performance, quality, and quality consistency. Yet each of these somehow
influences his overall appraisal of the product characteristics. For this reason synoptic or global perceived risk measures were included.

For the first measure, each respondent was asked to express his overall rating of the vendor just as he was asked to express his rating for the sixteen specific risk content variables. The second synoptic appraisal was generated by summing the individual perceived risk scores for the sixteen narrow risk content variables given in Figure 4.1. Included in this measure were the buyer's perceptions of specific risk content for the product, salesman, and company. Next, the risk perceived for price, performance, quality, and quality consistency were summed to generate an overview evaluation of product characteristics. With a similar line of reasoning, the four specific risk contents comprising the salesman's characteristics and the eight comprising the company's characteristics were combined to create summary assessments of the salesman and the company.

**Situational Variables**

A major thrust of this project was to examine the situationality of perceived risks. As was evident in the literature review, two situational variables have been studied with some success. These are organizational role position and product category.

Three organizational role positions are included in this research—purchasing agent, scientist, and manager. The term purchasing agent, as used in this research, includes all purchasing department personnel regularly interacting with the vendors' representative and the other organizational members who are responsible for specific
vendor selection decisions. In some industrial firms, these purchasing people may be referred to as buyers or senior buyers.

Similarly, for the purpose of this research, scientists are defined as people who have considerable education, formal or otherwise, in such areas as engineering, chemistry, physics and the natural sciences. In addition they must be currently abreast of the technical literature relative to their organizational assignment. Thus, scientists are those personnel who influence the purchase decision by commenting competently on technical parameters and who have a corresponding responsibility for the consequences of the decision outcome.

In the bulk of purchases, including the type of purchase situations included in this research, top management plays no identifiable role in the purchase process, either as an active participant or as a reviewing authority. The impetus for the decision will occur at the operational or lower levels of management. Consequently, it is this type of purchase decision environment which is of interest in this research. Often the relevant manager will be the scientist's supervisor.

The selection process for the other situational variable presented a challenge. Ideally, the product categories would be selected to afford an objective risk continuum from low risk to high risk. As so frequently is the case, the ideal is not currently possible. In the literature examination, it was noted that some perceived risk scholars had commendably circumvented the obstacle by making certain
assumptions permitting an inference that their work was based on objective risk variations.

Another philosophical approach is offered for this investigation. Risk is impossible to define in a totally satisfactory way, and an objective risk continuum is not really defensible. Consequently, it is not contended that the products selected for this study can be positioned a priori on an objective risk continuum. Without having to justify theoretically the selection of product categories to be examined, it was possible to employ a face validity selection process. However, it is believed that the face validity procedure permitted the selection of three products approximating three different objective risk levels—low, medium, and high. The product selection criteria used in the selection process is discussed later. As a synopsis, it was required that product number one be low cost, low importance, and low complexity relative to the other two products selected. Product number three was as high in cost, importance, and complexity as possible. Finally, product number two possessed intermediate values for these cost, importance, and complexity requirements.

The absence of an assumption relating selected products to an objective risk continuum is limiting but not crucial to the purposes of the investigation. With considerable confidence it will be possible to make inferential statements about any differences in risk perceived between the product categories. With less confidence, it will be possible to make inferences about the influence of objective product risk level and the resulting perceived risk or buying behavior.
The final situational variable was the buying status of the respondent firm with respect to the vendor participating in this research. Either the respondent firm was currently purchasing the product of interest from the participating firm or it was not. Thus there were two buying statuses—buyers and non-buyers. Notwithstanding the intuitive appeal of the idea that people who accept a sales offer (buyers) may perceive different levels and types of risk than those who reject the offer (non-buyers), this area of investigation has been largely ignored. As noted before only two studies have been published and the results were not conclusive.111

To have the differences in risk perceived relate to the participating firm as a base point or standard, a restrictive definition was necessary for the population to be investigated. A buyer was defined to include only those industrial firms who are currently purchasing a significant portion of its requirements of one of the selected products from the participating vendor. A non-buyer was defined to include only those industrial firms which are currently buying one of the selected products from another source, but who have been receiving regular contact by the sales department of the firm participating in this project. Thus, some current and potential users of the products of this project were omitted.

No attempt was made to discover who the competitive sources were. For this research only two sources were assumed to exist for

each product category—the participating firm and its competitors. Any differences expressed by the respondent of firms are always examined using this aggregate construct of competitors.

**Role Occupant Variables**

The selection of role occupant variables was a challenging task for two reasons. First, research findings relating buying behavior to the characteristics of the role occupant are generally inconclusive. Either the supporting data are weak, or validation research produces contradictory findings. Second, personality variables are the most frequently used. When several are employed, high intercorrelation is found so that the use of additional or multiple personality variables does not substantially increase the amount of explained behavior.

With these problems in mind, the role occupant variables, listed in Figure 4.2, were selected. From the purchasing literature, there is a basis to believe that these variables are highly important to the perceptual processes associated with vendor selection decisions. Also from the literature, there is reason to expect that these variables measure independent personal characteristics. Thus these role occupant variables were analyzed for the purpose of predicting the risk perceived by the individual members of the buying center.
Figure 4.2

Role Occupant Variables

1. Generalized self-confidence;
2. Specific (task) self-confidence;
3. Total industrial work experience;
4. Work experience in current department or product area;
5. Role occupant's perception of superior's attitude toward current vendor;
6. Role occupant's perceived level of responsibility if the purchase decision is later shown not to be the best; and
7. Role occupant's perceived influence in the purchase decision.

Risk Reduction Variables

The previous variables, role occupant and situational, were selected for their potential to predict perceived risk. At this point, it is desirable to alter the flow of thought by considering the predictive capability of perceived risk. High perceived risk is not tolerable and is reduced by the decision maker to some tolerable or manageable level. The level and type of risk subjectively experienced individually and collectively by vendor selection decision members should influence their decision and their post-decision activity.

Alleviation of perceived risk is largely the alleviation of uncertainty. Several mechanisms are available to achieve this and two of the most important ones were examined. First, if a decision
member is motivated to reduce perceived risk, he can be expected to purchase from the supplier who has been reliable over the years. Thus, one focus was the ability of perceived risk to predict the length of time purchased from the current source. A second well-established mechanism for reducing the uncertainty dimension of perceived risk is information collection and analysis. Formal vendor performance analysis programs, where actual performance data are recorded for analysis, would appear attractive to people perceiving high risk. Consequently, perceived risk was analyzed for its ability to predict post-purchase decision activity as measured by the existence of a formal vendor performance analysis program.

Hypotheses

In order to provide specific direction to the research, several hypotheses are presented. These circumscribe the theoretical questions this research was designed to investigate. A research presentation, rather than a null framework, was selected as it affords more insight into the results expected. It is important to recognize that most of the hypotheses stated here are but a general statement of a set of hypotheses involving each risk content as well as the total perceived risk. Explaining this further, using hypothesis one as an example, the hypothesis could be enlarged to state:

The perceived risk (for total cost, performance, quality, quality consistency, honesty, dependability of promises, etc. for all the 21 risk content variables included in this research) will be higher for members of the non-buying firms than for members of the buying ones.
As this example clearly demonstrates, to write each hypothesis in complete form is unnecessarily lengthy.

\[ H_1: \] Perceived risk will be higher for members of the non-buying firms than for members of the buying ones.

\[ H_2: \] Perceived risk will be inversely related to the length of time purchased from current source.

\[ H_3: \] The amount of risk perceived by a buying center member will decrease as his generalized self-confidence, his specific self-confidence and work experience increase.

\[ H_4: \] Firms experiencing high perceived risk will have a greater tendency to have or to be considering a formal vendor performance analysis program.

\[ H_5: \] Perceived risk will increase as a buying center member's perception of his own responsibility and influence increases.

\[ H_6: \] Scientists will perceive higher risks toward product characteristics than will the other two role occupants.

\[ H_7: \] Purchasing agents will perceive higher risk toward the cost of the product than will the other two role occupants.

\[ H_8: \] The level of risk associated with the salesman will always be higher than those associated with the product or the vendor because of a source effect.

Selection of Respondents and Products

The Ohio State University Organizational Buying Behavior Group was able to obtain the cooperation of a very large United States firm which is a substantial international competitor in the chemical intermediate field. The cooperating firm requested to remain anonymous.

A list of customers and prospective customers for three chemical intermediate products was obtained from the cooperating firm. For
each product selected, the firms on the customer prospect list had purchasing experience with the product. Each list represented all of the U.S. and contained at least 100 firms. Each firm on the customer prospect list purchased sufficient units annually to consider the product important.

In a deliberate effort not to study a very low risk product, a criterion was established that all of the products be sufficiently complex or technical so that the purchasing staff at least solicited the opinion of the technical staff and the management at the operations level. A minimum customer size was specified so that the majority of customers and potential customers were sufficiently large as to have a purchasing department, a technical staff, and an operations management staff.

The final requirement for the customer prospect list was discussed earlier when the terms "buyer" and "non-buyer" were defined. In the discussion of the restrictive definition of a non-buyer, it was noted that this definition excluded some current and potential users of this project's products. This was a necessary procedure in that it is always assumed that the non-buyer, in comparing the "out" vendor to his present source, was using the participating firm as the standard. This is a plausible assumption as the non-buyers, at the time the data were collected, were being contacted regularly by the participating firm's salesman.

Finally, the participating firm selected three products which satisfied all these criteria and, in addition, varied in risk to the
buying firm from low to medium to high. Low cost, low importance, and low complexity relative to the other two products was the final requirement for the low risk product. The high risk product was as high in cost, importance, and complexity as possible while still satisfying the previously specified criteria. The medium risk product had intermediate values for these final requirements, although there was no conscious attempt to have an exact median location. In fact, such a location would be entirely fortuitous.

The data sources are shown diagrammatically in Figure 4.3.

**Figure 4.3**

Sources of Data

![Diagram of sources of data]

Pretest Procedure

A two-phase procedure was employed to develop the questionnaire. First, a preliminary questionnaire was presented to those people at The Ohio State University knowledgeable in the areas of mail questionnaires and industrial marketing. Using their constructive comments,
a second questionnaire was prepared. With this improved instrument, the second phase was directed to industrial firms in Columbus, Ohio. Then a final questionnaire, six pages in length, was prepared. Additional pretest particulars and sample questionnaires are given in the Appendix.

Collection Procedure

In November, 1970, a questionnaire packet was sent to the firms on the provided list. If the purchasing agent's name was known, and it was most of the time, the packet was mailed to him. However, when the name of the purchasing agent was not known, another name from the list was used. It was believed that a name, rather than a specific role position, was the more critical factor in trying to maximize response rates. The packet contained the following:

1. An introductory letter;
2. An instruction page;
3. A questionnaire and return envelope for the purchasing agent;
4. A questionnaire and return envelope for the scientist; and
5. A questionnaire and return envelope for the manager.

The introductory letter was written on the Ohio State University Buying Behavior Group stationery. Both the introductory letter and attached instruction sheet utilized a generic format so that the different ones would not be necessary for each role position and product category. The two documents, included in the Appendix,
explicated the nature of the project and the extent of cooperation desired. Considerable effort was directed toward the quality of these two instruments, for they had to develop substantial interest in the receiver.

Cooperation from the receiver was solicited for two requests. First, the receiver of the questionnaire packet was asked to complete the questionnaire for his organizational role position and return it in the envelope provided. Second, being very knowledgeable in his firm's purchase process for this product, he was requested to select the people in his firm most qualified for the questionnaires involving the other two role categories. Then he was asked to seek their cooperation.

Two weeks after the initial questionnaire packet was mailed, a follow-up letter was sent to all of the names on the original mailing list. Again the Organizational Buying Behavior Group stationery was used. A copy of this letter is provided in the Appendix. Only one follow-up was undertaken.

Research Instruments

In this section, the specific instruments employed to measure the research variables of this investigation are discussed. Attention is directed toward the selection, application, and assumptions for each.
Perceived Risk

Several perceived risk indices were included in this investigation. All of these were generated from the perceived risk instrument to be discussed here.

On the questionnaire completed by the respondents, the two parts to the perceived risk instrument were actually Part I and Part III. Part I focused on the importance of the consequence while Part III dealt with uncertainty.

The instructions for Part I were as follows:

Instructions: This questionnaire contains some variables that are frequently considered when selecting a source of supply. For each variable listed, please check the location on the scale that best describes the importance of that variable to you for vendors of . . . .

The name of the product studied has been omitted to insure the anonymity of the participating vendor. Seventeen risk contents were listed as the variables. The first one was total cost and it appeared as follows:

1. Total Cost

<table>
<thead>
<tr>
<th>Not Very Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

For scoring, Not Very Important was assigned a value of one and Very Important a value of five.

Part III had a very similar format with importance being replaced by certainty in the instructions:

Instructions: This questionnaire contains some variables that are frequently considered when selecting a source of supply. For each variable listed, please check the
location on the scale that best describes your certainty that the current vendor is at least equal to another vendor of . . . .

If you purchase . . . from more than one vendor, compare the primary source with a vendor from whom you purchase none. If this is not possible, compare the primary source with the one from whom you purchase the least.

Note that, again, the product name was omitted for the reason previously given. As in Part I, seventeen risk contents were the variables. The first one, total cost, was presented as follows:

<table>
<thead>
<tr>
<th>1. Total Cost</th>
<th>Not Very Certain</th>
<th>Very Certain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

In the scoring for perceived risk computation, Not Very Certain was given a value of five and Very Certain a value of one. In other words, it was necessary to reverse the scale direction as given on the questionnaire. It was felt that a positively phrased question would be better received by the respondent.

As previously noted, one perceived risk index assumed the uncertainty component was the more important one, and that index ignored the consequence importance component. The other two indices assumed these components to have equal justification and merit; thus equal weights were assigned. In the additive model, the risk perceived for total cost would equal the simple sum of the scale responses for each component—uncertainty and importance. Similarly, the multiplicative model considers risk to be the product of the scale responses for the two components.

Another technical problem concerns the required assumption of equal scale gradations in a psychological sense. Thus, on the
certainty component, the first and second scale locations must be separate by a distance equal to that separating the second and third ones. A similar assumption is necessary for the other component. Finally, it is necessary to assume, if the two components are to be combined, that the intervals of the consequence scale equal those of the uncertainty scale. If either of the scales are to be used in parametric testing, there is no circumvention of the interval requirement.

Although this assumption is vulnerable to criticism, it is one that most marketing scholars are willing to make. In part it is a matter of necessity where the benefit appears to outweigh the possible danger.

Generalized Self-Confidence

The generalized self-confidence instrument employed followed the research performed by Janis and Field and several others. As developed by Janis and his colleagues, the instrument contains twenty-three questions and was considered too long for this investigation. Thus, using a face validity procedure, a nine-item format was selected.


The decision to shorten the questionnaire, using a face validity procedure, was not without precedent. Several researchers used this procedure to shorten the twenty-three question format. Cox and Bauer, in a study of generalized self-confidence and persuasibility, employed a nine-item format. Barach used a similar number of questions in trying to assess the influence of advertising as a function of the consumers' generalized self-confidence. In another study of purchasers of new Chevrolet cars, Bell opted a ten-question instrument.

The complete self-confidence instrument of nine questions is presented in the Appendix as Part V of the sample questionnaire. The location of this instrument at the end of the questionnaire was deliberate as it was learned in the pretest that a significant number of business men were not convinced that it had any relevance to purchasing decisions. With this location, a commitment to complete the questionnaire was theoretically available once the previous four parts had been completed.

The instructions for the nine questions were, "In the questions that follow, please circle the phrase that best describes you." Five phrases were provided as the following example shows:

114 Cox and Bauer, Risk Taking and Information Handling, p. 397.
How often do you feel inferior to most of the people you know?

Very Often  Fairly Often  Sometimes
Once in a Great While  Not at All

The most confident answer, "Not at All," in this example, was assigned a rating of five and the least confident response was given a value of one. By making the assumption of equal gradations, it was possible to combine these nine questions into a single summed score for each individual and to apply the more powerful parametric tests in the analysis of results.

Specific Self-Confidence

Specific self-confidence is sometimes referred to as task self-confidence in that it relates to the solving of a specific problem. Although the specificity of self-confidence has often been recognized, little empirical research has ever been initiated. This study built on the work of Bell who tried to relate the respondents' self-confidence toward the purchase of a new car to his persuasibility. Although the intent was, of course, to measure specific self-confidence, there was the problem always present in research instruments--did it measure what it purported to? However, here the question is particularly relevant because of the limited information available in this area. Bell found a high intercorrelation for the task questions and thereby inferred that he was measuring specific self-confidence. 117

117 Ibid., p. 448.
Four of the questions studied by Bell were used in this research. A five position scale, similar to those used on Parts I and III of the questionnaire, was employed with the respondent being asked to check the location that best described him. The questions asked were (in simplified form):

1. How would you rate your experience along the lines of selecting a vendor;
2. To what extent are you familiar with the complexities of vendor selection decisions;
3. Is selecting a vendor an appropriate task for taking full advantage of your abilities; and
4. To what extent have you had the opportunity to become familiar with the offerings of several suppliers?

The name of the actual product category being investigated was included in the original instrument but has been removed here for the purposes of this presentation.

Once again, the assumption of interval data was requisite. With this the tools of parametric analysis could be applied to the specific self-confidence score which was the sum of the scores on the individual questions.

**Direct Measurement**

The remaining research instruments might be described as direct measurement in the sense that direct questioning was possible. Most of these direct questions focused on the following role occupant variables:

1. Work experience in current department or product area;
2. Perception of superior's attitude toward current vendor;

3. Perceived level of personal responsibility; and

4. Perceived influence in the purchase decision.

Direct questioning was also employed to determine vendor loyalty by asking how many years the product had been continuously purchased from the current vendor. Finally this technique was selected to obtain the existence of a multiple source and formal performance appraisal policies.

Hypothesis Testing

The form in which the hypotheses were previously stated is not the most appropriate form for testing. By rephrasing each of them in their negative or null form, the new structure will parallel the reasoning of the particular statistical tests which were used for significance testing. Rejection of the null hypothesis was the equivalent of accepting the original one.

In an attempt to avoid confusion, the null statement of the research hypotheses will be labeled with an "n" as well as with a number. Research hypothesis $H_1$ becomes $H_{n1}$.

**Testing Hypothesis $n_1$**

$H_{n1}$: There is no significant difference in the risk perceived by members of the non-buying firms and members of the buying firms.

The null hypothesis states that the buying and non-buying firms belong to identical populations. More specifically, this hypothesis
argues that the risks perceived by these types of firms were identical. For each of the twenty-one risk content variables (total cost, product quality, etc.) it is hypothesized that buying and non-buying firms perceived identical levels of risk.

To test this hypothesis, the means of each risk content variable were calculated. The differences between the means were examined using the nonparametric Mann-Whitney U Test. This test was selected for two reasons. First, the underlying assumptions are that the groups be independent and that the data are ordinal. These assumptions were much more easily met than were the ones required for the parametric alternative, the Student t test. Second, the Mann-Whitney is one of the most powerful nonparametric tests, being approximately 95 percent as powerful as the t test. For small samples, tables of the U statistic have been prepared. As sample size becomes large, above twenty for the larger group, the sampling distribution of U rapidly approaches the normal distribution so that the Z statistic becomes the correct one.

A second type of test, multiple discriminant analysis, was used to obtain more power. For this multiple discriminant analysis, it was assumed that the population parameters were multinormally distributed and had unknown, but equal, covariation and variance.


119 Ibid., p. 121.

This test was appropriate as the predictor variables (risk content variables) were assumed to be intervally scaled and the criterion variable (buy status) was expressed dichotomously. The basic idea was to try to discriminate the buying firms from the non-buying ones using buy status as the criterion variable and the perceived risks as the predictor set. In order to determine statistical significance, each of the twenty-one partial discriminant coefficients, one for each risk content variable, were tested using a sequential F test. The coefficients were generated by a stepwise multiple discriminant analysis program. The significance test, F test, examined the assertion that each of the coefficients, in the linear combination of predictor variables, was equal to zero.

**Testing Hypotheses n2, n3, n4 and n5**

The next four hypotheses were originally presented independently as their theoretical underpinnings are somewhat different. Testing, however, involves the same statistical model and this accounts for their grouping at this time.

- **H_{n2}**: Perceived risk is independent of the length of time purchased from the current source.
- **H_{n3}**: There is no significant relationship between the amount of risk perceived by the buying center member and the extent of his generalized self-confidence, his specific self-confidence, and work experience.
- **H_{n4}**: No significant relationship exists between a firm's members' perceived risk and the tendency for the firm to have or to be considering a formal vendor performance analysis program.

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Hypothesis number one focused on the use of perceived risk to explain buying behavior or buy status. Hypotheses two through five were concerned with the prediction of risk; what factors cause, or at least are associated, with certain types and levels of perceived risk.

Stepwise multiple regression was used to generate a net regression coefficient for each of the ten predictor variables—length of time purchased from the current source, generalized self-confidence, specific self-confidence, etc. Before significance could be established, it was necessary to assume that the data satisfied the requirements of the multiple regression model which are linearity, independence, uniform scatter, and normality. The significance test, F test, examined the assertion that each of the coefficients in the coefficient vector was equal to zero.

Testing Hypotheses n6 and n7

The next hypotheses are grouped together because of the fact that the same statistical model was used to test them.

H_{n6}^: \text{There is no significant relationship between role position and amount of risk perceived toward product characteristics.}

H_{n7}^: \text{There is no significant relationship between role position and the amount of risk perceived toward product cost.}

In these hypotheses, three criterion groups were used—purchasing agent, scientist, and manager. As the criterion group was nominally scaled, and the predictors were assumed to be intervally scaled, the proper analytical tool was multiple discriminant analysis. Predictor variables were product quality, product quality consistency, product performance, and total cost. Coefficients for each of the predictor variables were examined using a stepwise multiple discriminant analysis. The F test was used to determine if each of these coefficients was significantly different from zero.

**Testing Hypothesis n8**

\[ H_{n8} : \text{There is no significant difference in the levels of risk perceived for the salesman, the company, and the product.} \]

The total risk perceived toward the salesman was defined earlier to be equal to the sum of the salesman's characteristics given in Figure 4.1. These characteristics are honesty, dependability of promises, competency, and effectiveness. Similar definitions were given for the total risk perceived for the product and the company. The characteristics included in each definition are listed in Figure 4.1.

The student t test for difference between means was selected. As only three means were being tested, there was no reason to be concerned with the reduction in alpha level accruing to repetitive mean tests. Before the mean test could be performed it was necessary to give the means a common basis. As can be seen in Figure 4.1, the product and salesman totals had only four items while the company
total had eight. Thus, the product and salesman totals for each respondent were multiplied by two before the means for these groups were calculated. After this multiplication, the means had a common basis, and the application of the t test was straightforward. The null hypothesis asserted that no difference existed between the means of the three groups--company, product, and salesman.

Summary

In this chapter, attention was directed to the specific methodology utilized in this investigation. Early in the chapter considerable attention was given to the perceived risk paradigms used here as well as a backdrop for these choices.

Research variables were then presented. Particular note was made of the innovative way in which these research variables were being researched. Specific direction to the investigation was provided by the research hypotheses.

As the selection of respondents and products was rather rigorous, an exposition of the selection criteria was presented. In developing the research instrument, a two-phase pretest was employed. Details of the research instrument and the mail survey were provided. Finally, the framework in which hypotheses were tested was presented in the form of statistical models and appropriate statistical tests.
CHAPTER V

Results

Introduction

The purpose of this chapter is to present the results of the study presented in Chapter IV. After a discussion of the response distribution, each hypothesis is examined to determine whether it should be accepted or rejected. Interpretation is provided for the specific results accompanying each hypothesis. Finally, a supplemental discussion is provided to relate the overall findings to perceived risk and industrial vendor selection literature.

Response Distribution

One hundred forty-eight usable questionnaires, representing seventy-five different firms were returned in time to be included in the analysis. Six more questionnaires came too late and another three were improperly completed for a total of one hundred fifty-seven questionnaires completed and returned.

Eleven companies returned all of their questionnaires with the remark that they were not customers or prospective customers of the product on the questionnaire. Five companies refused without explanation while one refused because the company was on strike. Three responding companies disqualified themselves as being too small to
follow the required procedure. Thus 27.3 percent of the firms responded in one way or another.

Table 5.1 affords more detail about the 148 usable questionnaires. The overall company response was 21.8 percent, but this low figure was considerably affected by the low-risk non-buying category which had only a 5.4 percent response rate. If the other two products are considered by themselves, or if the not-buying category of the low-risk product is simply eliminated, the percent return is 25.0 percent. Although this is indeed a low response rate, it is not that atypical of industrial marketing research. Thus, given past experience with industrial marketing mail questionnaires, this one was relatively successful.

Table 5.1

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Respondent Company's Buy Status</th>
<th>No. of Companies Returning Questionnaires</th>
<th>Percent Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk</td>
<td>Buying</td>
<td>16</td>
<td>28.1</td>
</tr>
<tr>
<td></td>
<td>Not Buying</td>
<td>14</td>
<td>26.9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>27.5</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>Buying</td>
<td>10</td>
<td>26.5</td>
</tr>
<tr>
<td></td>
<td>Not Buying</td>
<td>20</td>
<td>21.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>21.8</td>
</tr>
<tr>
<td>Low Risk</td>
<td>Buying</td>
<td>12</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>Not Buying</td>
<td>3</td>
<td>5.4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15</td>
<td>15.3</td>
</tr>
<tr>
<td>All Products</td>
<td>Buying</td>
<td>38</td>
<td>27.0</td>
</tr>
<tr>
<td></td>
<td>Not Buying</td>
<td>37</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>75</td>
<td>21.8</td>
</tr>
</tbody>
</table>

123 Platten, p. 57.
It is interesting to note that the response rate was always higher for the buying firms than it was for the non-buying ones. Although this could be explained a priori on the basis of the hypothesis that the interested firms respond more often, there may be a supplemental explanation. The buying list was of higher quality than the non-buying one. Nowhere was this more evident than for the low-risk product. For this product, the customer list was taken from the company's customer files, but the non-buying entries came almost entirely from a trade association listing. Due to the nature of the product's uses and the association, it is impossible to establish the probability of any entry's being a user of the product. In part, this is but an aspect of the interest hypothesis. If a firm does not use a product, there is an excellent chance that its interest in a product-related questionnaire will be low. Importantly, the prospect lists for the other two products came from company files. Therefore, the quality difference between the buying and non-buying lists was not as great as for the low-risk product. Correspondingly, as evident in Table 5.1, the difference in response rates between buy categories is much smaller for the medium and high risk product categories.

Ignoring any real or assumed quality difference in lists for the various products, it is noteworthy that the highest response was for the product defined as highest in risk. Again this result

might be interpreted as further demonstration of the interest hypothesis. Yet with the exception of one research category, low risk prospective customers, the response rate variance was low.

Another interesting comparison is the rate of return for each role position. Both the initial letter, mailed with the questionnaire, and the follow-up letter stressed the applicability of this research to the purchasing profession, thus the logical prediction would be to expect the highest response rate for purchasing agents. Surprisingly, the purchasing agents were the least cooperative of the three role categories. Of the 148 usable questionnaires, 35.1 percent were from scientists, 33.1 percent from managers, and 31.1 percent from the purchasing department representative.

Examination of the Null Hypotheses

In this section each null hypothesis is restated and the data derived from the questionnaires are examined statistically to determine whether the hypothesis should be accepted or rejected.

Testing Hypothesis 1

\[ H_{n1}: \text{There is no significant difference in the risk perceived by members of the non-buying firms and members of the buying firms.} \]

According to this hypothesis, the means for each of the twenty-one risk content variables should not differ between the buying and non-buying firms. These means are presented in the next four tables. An individual table is prepared for each measure of perceived risk. Thus there are tables for the importance and uncertainty components
and tables for the additive and multiplicative models. For each table, the statistical significance of the difference between the buying and non-buying means was determined using the Mann-Whitney U Test. For large sample sizes, the sampling distribution of U rapidly approaches the normal distribution. Therefore the significance was determined using the standardized variable or Z score.

The results for the importance component are presented in Table 5.2. It may be recalled that this is a measure of perceived risk used in the two-component model, but is not a measure of perceived risk by itself. Thus, the main reason for presenting these results is completeness rather than the testing of hypothesis number one.

Two findings are contained in Table 5.2. First, with the exception of the variables emergency assistance and salesman's effectiveness, the higher mean was associated with the buying firms. There is no theoretical reason for expecting a higher or lower value for this measure and there is no value for examining why the buying mean was generally higher. Second, only five variables had means whose magnitudes were significantly different. For these five means, the buying firm had the higher mean. An initial conclusion is that, for the products studied, only five variables are important in the selection process. This is a premature conclusion for, according to the hypothesis under scrutiny and data to be presented shortly, such decisions are made on perceived risk.

125 Siegel, pp. 116-126.
### Table 5.2

Mean Values and Mann-Whitney Results for the Individual Risk Content Variables—Importance Component

<table>
<thead>
<tr>
<th>Risk Content Variable</th>
<th>No-Buy Mean</th>
<th>Buy Mean</th>
<th>Mann-Whitney U</th>
<th>Z Score</th>
<th>Two-Tailed Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>4.29</td>
<td>4.46*</td>
<td>2510</td>
<td>0.86</td>
<td>n.s.</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>4.47</td>
<td>4.61*</td>
<td>2514</td>
<td>0.84</td>
<td>n.s.</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>3.23</td>
<td>3.42*</td>
<td>2485</td>
<td>0.95</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Honesty</td>
<td>4.26</td>
<td>4.30*</td>
<td>2691</td>
<td>0.16</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Performance</td>
<td>4.79</td>
<td>4.94*</td>
<td>2562</td>
<td>0.66</td>
<td>n.s.</td>
</tr>
<tr>
<td>Service</td>
<td>4.30</td>
<td>4.32*</td>
<td>2726</td>
<td>0.03</td>
<td>n.s.</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>4.49</td>
<td>4.62*</td>
<td>2586</td>
<td>0.57</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td>4.13</td>
<td>4.27*</td>
<td>2521</td>
<td>0.82</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality</td>
<td>4.73</td>
<td>4.93*</td>
<td>2388</td>
<td>1.32</td>
<td>0.10</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>4.06</td>
<td>4.30*</td>
<td>2368</td>
<td>1.40</td>
<td>0.10</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>1.92</td>
<td>2.11*</td>
<td>2503</td>
<td>0.88</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Competency</td>
<td>3.36</td>
<td>3.38*</td>
<td>2718</td>
<td>0.06</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>4.73</td>
<td>4.89*</td>
<td>2497</td>
<td>0.91</td>
<td>n.s.</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>4.03</td>
<td>4.08*</td>
<td>2704</td>
<td>0.12</td>
<td>n.s.</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>4.04*</td>
<td>3.97</td>
<td>2570</td>
<td>0.63</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Effectiveness</td>
<td>3.53*</td>
<td>3.41</td>
<td>2540</td>
<td>0.74</td>
<td>n.s.</td>
</tr>
<tr>
<td>Overall Rating</td>
<td>3.90</td>
<td>4.07*</td>
<td>2437</td>
<td>1.14</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sum of First Sixteen Variables</td>
<td>64.23</td>
<td>66.01*</td>
<td>2393</td>
<td>1.31</td>
<td>0.10</td>
</tr>
<tr>
<td>Sum of Product Variables</td>
<td>37.06</td>
<td>38.45</td>
<td>2243</td>
<td>1.88</td>
<td>0.05</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>30.57</td>
<td>30.70*</td>
<td>2722</td>
<td>0.04</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sum of Company Variables</td>
<td>30.55</td>
<td>31.44*</td>
<td>2388</td>
<td>1.33</td>
<td>0.10</td>
</tr>
</tbody>
</table>

n.s. = Not significant using a two-tailed test.

*Denotes the higher mean value for each risk content variable.
Because the uncertainty model is an accepted measure of perceived risk, Table 5.3 is more directly relevant to this hypothesis. Furthermore the results are rather conclusive that firms do perceive more uncertainty (risk) toward the out or potential vendor. For all of the significant differences, of which there were eleven, the non-buying mean was higher. In addition, the decision to select a specific source has several discrete dimensions such as total cost, product performance, product quality, etc. When high uncertainty is perceived for these discrete risk content variables, high uncertainty is also perceived for the overall company rating. The consistency of expression for individual risk contents with the overall rating appears to be particularly important. It specifies to all vendors the specific risk content variables which are important. Further, it suggests that these individual variables are combined in some logical pattern to produce an overall rating which is consistent with the individual ones.

The results for the additive model are presented in Table 5.4. As with the uncertainty model, where significant differences were found, the higher mean belonged to the non-buying firm. The main difference between the findings for these two models is less risk content variables were significant for the additive one. Only three, service, overall company rating, and sum of the product variables, were found to be significant. All three of these were also significant in the uncertainty model. For the remaining eight found to be significant in the uncertainty model, it would appear that the higher uncertainty was accompanied by a relatively low importance rating for the non-buying
Table 5.3
Mean Values and Mann-Whitney U Results for the Individual
Risk Content Variables--Uncertainty Model

<table>
<thead>
<tr>
<th>Risk Content Variable</th>
<th>No-Buy Mean</th>
<th>Buy Mean</th>
<th>Mann-Whitney U</th>
<th>Z Score</th>
<th>Two-Tailed Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>1.90*</td>
<td>1.58</td>
<td>2295</td>
<td>1.68</td>
<td>0.05</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>1.91*</td>
<td>1.66</td>
<td>2342</td>
<td>1.50</td>
<td>0.10</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>2.69*</td>
<td>2.52</td>
<td>2546</td>
<td>0.72</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Honesty</td>
<td>2.19</td>
<td>2.30*</td>
<td>2632</td>
<td>0.39</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Performance</td>
<td>1.65*</td>
<td>1.41</td>
<td>2384</td>
<td>1.34</td>
<td>0.10</td>
</tr>
<tr>
<td>Service</td>
<td>2.05*</td>
<td>1.77</td>
<td>2400</td>
<td>1.28</td>
<td>0.10</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>1.99*</td>
<td>1.79</td>
<td>2426</td>
<td>1.18</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td>2.17*</td>
<td>2.06</td>
<td>2554</td>
<td>0.69</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality</td>
<td>1.62*</td>
<td>1.31</td>
<td>2260</td>
<td>1.82</td>
<td>0.05</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>2.19*</td>
<td>1.82</td>
<td>2356</td>
<td>1.43</td>
<td>0.10</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>3.88*</td>
<td>3.48</td>
<td>2364</td>
<td>1.42</td>
<td>0.10</td>
</tr>
<tr>
<td>Salesman's Competency</td>
<td>2.64*</td>
<td>2.54</td>
<td>2564</td>
<td>0.65</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>1.73*</td>
<td>1.54</td>
<td>2522</td>
<td>0.81</td>
<td>n.s.</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>2.03*</td>
<td>1.80</td>
<td>2510</td>
<td>0.86</td>
<td>n.s.</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>2.32*</td>
<td>2.23</td>
<td>2674</td>
<td>0.23</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman Effectiveness</td>
<td>2.58*</td>
<td>2.56</td>
<td>2627</td>
<td>0.41</td>
<td>n.s.</td>
</tr>
<tr>
<td>Overall Rating</td>
<td>2.19*</td>
<td>1.70</td>
<td>1991</td>
<td>2.85</td>
<td>0.05</td>
</tr>
<tr>
<td>Sum of First Sixteen Variables</td>
<td>35.55*</td>
<td>32.35</td>
<td>2328</td>
<td>1.55</td>
<td>0.10</td>
</tr>
<tr>
<td>Sum of Product Variables</td>
<td>13.79*</td>
<td>11.66</td>
<td>2114</td>
<td>2.38</td>
<td>0.05</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>19.17*</td>
<td>18.90</td>
<td>2672</td>
<td>0.24</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sum of Company Variables</td>
<td>19.06*</td>
<td>17.07</td>
<td>2292</td>
<td>1.69</td>
<td>0.05</td>
</tr>
</tbody>
</table>

n.s. = Not significant using a two-tailed test.

*Denotes the higher mean value for each risk content variable.
Table 5.4

Mean Values and Mann-Whitney U Results for the Individual Risk Content Variables—Additive Model

<table>
<thead>
<tr>
<th>Risk Content Variable</th>
<th>No-Buy Mean</th>
<th>Buy Mean</th>
<th>Mann-Whitney U</th>
<th>Z Score</th>
<th>Two-Tailed Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>6.18*</td>
<td>6.01</td>
<td>2526</td>
<td>0.80</td>
<td>n.s.</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>6.38*</td>
<td>6.27</td>
<td>2568</td>
<td>0.64</td>
<td>n.s.</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>5.95*</td>
<td>5.94</td>
<td>2684</td>
<td>0.19</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Honesty</td>
<td>6.45</td>
<td>6.59*</td>
<td>2607</td>
<td>0.49</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Performance</td>
<td>6.44*</td>
<td>6.33</td>
<td>2508</td>
<td>0.87</td>
<td>n.s.</td>
</tr>
<tr>
<td>Service</td>
<td>6.35*</td>
<td>6.10</td>
<td>2314</td>
<td>1.61</td>
<td>0.10</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>6.48*</td>
<td>6.39</td>
<td>2598</td>
<td>0.52</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td>6.30</td>
<td>6.32*</td>
<td>2691</td>
<td>0.16</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality</td>
<td>6.35*</td>
<td>6.24</td>
<td>2607</td>
<td>0.49</td>
<td>n.s.</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>6.21*</td>
<td>6.11</td>
<td>2696</td>
<td>0.14</td>
<td>n.s.</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>5.81*</td>
<td>5.61</td>
<td>2500</td>
<td>0.89</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Competency</td>
<td>6.00*</td>
<td>5.92</td>
<td>2644</td>
<td>0.34</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>6.45*</td>
<td>6.42</td>
<td>2718</td>
<td>0.06</td>
<td>n.s.</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>6.05*</td>
<td>5.89</td>
<td>2542</td>
<td>0.73</td>
<td>n.s.</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>6.36*</td>
<td>6.21</td>
<td>2510</td>
<td>0.86</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Effectiveness</td>
<td>6.12*</td>
<td>5.97</td>
<td>2566</td>
<td>0.64</td>
<td>n.s.</td>
</tr>
<tr>
<td>Overall Rating</td>
<td>6.08*</td>
<td>5.77</td>
<td>2264</td>
<td>1.80</td>
<td>0.05</td>
</tr>
<tr>
<td>Sum of First Sixteen Variables</td>
<td>99.88*</td>
<td>98.20</td>
<td>2510</td>
<td>0.86</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sum of Product Variables</td>
<td>50.86*</td>
<td>50.03</td>
<td>2400</td>
<td>1.28</td>
<td>0.10</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>49.74*</td>
<td>49.61</td>
<td>2672</td>
<td>0.24</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sum of Company Variables</td>
<td>49.58*</td>
<td>48.52</td>
<td>2422</td>
<td>1.20</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

n.s. = Not significant using a two-tailed test.

*Denotes the higher mean value for each risk content variable.
firms so that the sum was not significant. In other words, high uncertainty was offset by low importance.

The same type of phenomenon appears in the multiplicative model, but to a lesser extent. In Table 5.5 it can be seen that seven risk content variables are significant. This list does not contain four (product quality, product performance, capability of supplying future demand, and sum of the first sixteen predictor variables) of the eleven variables found significant for the uncertainty model. Again high uncertainty on the part of the non-buying firm appears to be offset by low importance so that these four variables lose their statistical significance.

In summarizing the last four tables, eleven risk content variables were found to be significantly higher for the non-buying firms with the uncertainty model. Three of these variables were also significant for the additive model. These three plus four more from the original eleven, were significant in the multiplicative model. The loss in significance from the uncertainty model to the combination ones for specific risk content variables such as product quality can be explained as follows. The non-buying firm perceived higher uncertainty toward product quality than did the buying firm. However, the non-buying firm perceived lower importance for product quality, so that the linear and multiplicative combinations of uncertainty and importance were not always significant. Where perceived risk was found to be significantly different between the buying and non-buying firms, the higher risk was always associated with the non-buying firms.
### Table 5.5
Mean Values and Mann-Whitney U Results for the Individual Risk Content Variables—Multiplicative Model

<table>
<thead>
<tr>
<th>Risk Content Variable</th>
<th>No-Buy Mean</th>
<th>Buy Mean</th>
<th>Mann-Whitney U</th>
<th>Z Score</th>
<th>Two-Tailed Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>7.66*</td>
<td>6.82</td>
<td>2366</td>
<td>1.41</td>
<td>0.10</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>8.25*</td>
<td>7.45</td>
<td>2392</td>
<td>1.31</td>
<td>0.10</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>7.91</td>
<td>8.00*</td>
<td>2648</td>
<td>0.33</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Honesty</td>
<td>9.08</td>
<td>9.51*</td>
<td>2602</td>
<td>0.51</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Performance</td>
<td>7.70*</td>
<td>7.97</td>
<td>2460</td>
<td>1.05</td>
<td>n.s.</td>
</tr>
<tr>
<td>Service</td>
<td>8.62*</td>
<td>7.34</td>
<td>2358</td>
<td>1.44</td>
<td>0.10</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>8.66*</td>
<td>8.08</td>
<td>2559</td>
<td>0.67</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td>8.57*</td>
<td>8.22</td>
<td>2636</td>
<td>0.37</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality</td>
<td>7.61*</td>
<td>6.45</td>
<td>2434</td>
<td>1.15</td>
<td>n.s.</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>8.76*</td>
<td>7.53</td>
<td>2514</td>
<td>0.84</td>
<td>n.s.</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>6.50*</td>
<td>6.24</td>
<td>2657</td>
<td>0.29</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Competency</td>
<td>8.42*</td>
<td>7.89</td>
<td>2581</td>
<td>0.59</td>
<td>n.s.</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>8.21*</td>
<td>7.48</td>
<td>2644</td>
<td>0.35</td>
<td>n.s.</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>7.82*</td>
<td>7.20</td>
<td>2696</td>
<td>0.14</td>
<td>n.s.</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>8.97*</td>
<td>8.32</td>
<td>2672</td>
<td>0.23</td>
<td>n.s.</td>
</tr>
<tr>
<td>Salesman's Effectiveness</td>
<td>8.95*</td>
<td>6.79</td>
<td>2370</td>
<td>1.39</td>
<td>0.10</td>
</tr>
<tr>
<td>Overall Rating</td>
<td>8.27*</td>
<td>6.79</td>
<td>2122</td>
<td>2.35</td>
<td>0.05</td>
</tr>
<tr>
<td>Sum of First Sixteen Variables</td>
<td>131.79*</td>
<td>122.58</td>
<td>2414</td>
<td>1.23</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sum of Product Variables</td>
<td>62.39*</td>
<td>55.49</td>
<td>2233</td>
<td>1.92</td>
<td>0.05</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>70.03*</td>
<td>67.13</td>
<td>2600</td>
<td>0.51</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sum of Company Variables</td>
<td>65.58*</td>
<td>60.28</td>
<td>2342</td>
<td>1.50</td>
<td>0.10</td>
</tr>
</tbody>
</table>

n.s. = Not significant using a two-tailed test.

*Denotes the higher mean value for each risk content variable.
Thus there are reasons why some firms are buying from a given vendor and others are not. Overall company rating appears to be influential, if not instrumental, for it was significant in the uncertainty, additive, and multiplicative models. Knowing this is not enough; to change overall company rating or image requires a knowledge of this variable's components. Only then can communicative correction be directed to reducing the risks perceived. Knowing its overall image is worse than its competitor's simply does not provide sufficient specificity to the supplying firm.

One approach for management would be to use the variables found to be significant in the combination models. In every case for the data in this research, management would be guaranteed that the uncertainty component was significant and that the importance component was sufficiently salient. Variables meeting this two-fold criterion are total cost, service, ability to deliver on schedule, overall company rating, sum of the product variables, and sum of the company variables.

Another analysis of buy status as a determinant of perceived risk was performed using stepwise discriminant analysis. These results are presented in Table 5.6. The F test with appropriate degrees of freedom was used to test statistical significant. As the adjustment was so small, the canonical coefficients of multiple determination were not adjusted for the large number of variables.

Several discriminant groupings and all four perceived risk models were examined. Except for product one, the low-risk product,
Table 5.6

**Discriminant Analysis of Buy Status**

<table>
<thead>
<tr>
<th>Discriminate Grouping</th>
<th>Importance</th>
<th>Uncertainty</th>
<th>Additive</th>
<th>Multiplicative</th>
</tr>
</thead>
<tbody>
<tr>
<td>All observations</td>
<td>0.10</td>
<td>0.20</td>
<td>0.00</td>
<td>0.13</td>
</tr>
<tr>
<td>Product 1</td>
<td>0.78</td>
<td>0.85</td>
<td>0.30</td>
<td>0.74</td>
</tr>
<tr>
<td>Product 2</td>
<td>0.00</td>
<td>0.22</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Product 3</td>
<td>0.32</td>
<td>0.39</td>
<td>0.30</td>
<td>0.34</td>
</tr>
<tr>
<td>Purchasing Agent</td>
<td>0.39</td>
<td>0.40</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Scientists</td>
<td>0.33</td>
<td>0.52</td>
<td>0.00</td>
<td>0.29</td>
</tr>
<tr>
<td>Managers</td>
<td>0.35</td>
<td>0.00</td>
<td>0.30</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Unadjusted Canonical $R^2^*$

<table>
<thead>
<tr>
<th>Statistical Significance at 0.05 Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
</tr>
</tbody>
</table>

*The adjustment is quite small for this data, e.g., 0.85 becomes 0.84.*

very weak correlations were obtained between the discriminant groups. For all observations, the percent explained variation went from a low of zero for the additive model to a high of 20 percent for the uncertainty model. The maximum percent explained for product two was 22 percent and for product three it was 39 percent. Product one had the best results with only the additive model (30 percent explained variation) being extremely weak. Even the results obtained for the low-risk product are not really that outstanding, but being the highest obtained, these were analyzed further and the results are given in Table 5.7.

Examining the relative importance column of Table 5.7 it can be seen that the most important variable for product one was total cost. This seems most plausible as the product was a low risk product of almost commodity status. Combining the relative importance ratings
Table 5.7

Discriminant Analysis of Buy Status for Product One

<table>
<thead>
<tr>
<th>Variable</th>
<th>Uncertainty Model</th>
<th></th>
<th>Multiplicative Model</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discriminant Wt.</td>
<td>Stat. Sig. at 0.05 Level</td>
<td>Relative Importance</td>
<td>Stat. Sig. at 0.05 Level</td>
</tr>
<tr>
<td>Total Cost</td>
<td>-2.95</td>
<td>1</td>
<td></td>
<td>0.55</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>0.19</td>
<td>10</td>
<td>-0.31</td>
<td>0.13</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Salesman's Honesty</td>
<td>0.39</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Performance</td>
<td>2.69</td>
<td>2</td>
<td>-0.22</td>
<td>7</td>
</tr>
<tr>
<td>Service</td>
<td>-0.89</td>
<td>5</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>-1.13</td>
<td>4</td>
<td>0.43</td>
<td>2</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td>*</td>
<td>*</td>
<td>-0.47</td>
<td>3</td>
</tr>
<tr>
<td>Capability of Supplying Future Need</td>
<td>1.18</td>
<td>3</td>
<td>-0.35</td>
<td>4</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>*</td>
<td>*</td>
<td>0.03</td>
<td>12</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>0.81</td>
<td>6</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>-0.76</td>
<td>7</td>
<td>0.28</td>
<td>6</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>*</td>
<td>*</td>
<td>-0.14</td>
<td>9</td>
</tr>
<tr>
<td>Salesman's Effectiveness</td>
<td>-0.47</td>
<td>8</td>
<td>0.14</td>
<td>9</td>
</tr>
<tr>
<td>Overall Rating of Vendor</td>
<td>*</td>
<td>*</td>
<td>0.16</td>
<td>8</td>
</tr>
</tbody>
</table>
for both the uncertainty and multiplicative models, the vendor's
dependability of promises and capability of suppling future demand
appear to be important variables. It is most interesting to note
the absence of the composite product and company variables that
appeared so significantly in the Mann-Whitney U analysis. This is
surprising even though the Mann-Whitney U analysis was for all pro-
ducts and the discriminant analysis is only for the low-risk product.
It would appear, at least for product one, that these composite risk
contents are intercorrelated with the first sixteen individual ones.
When the individual and composite variables are used jointly to dis-
riminate, the individual ones have more power.

A brief explanation is needed for the significance of the signs
of the discriminant weights. The weights do not show functional
relationships such as, examining the uncertainty model of Table 5.7,
perceived risk is an inverse function of total cost. Note that the
total cost sign is positive in the multiplicative model. The com-
puter program assigns the first entering variable a sign in a rather
arbitrary way. However, once the first sign is determined, the signs
of the remaining variables are not arbitrary. If two variables have
the same sign in Table 5.7, their effect on perceived risk is in the
same direction. If two variables have opposite signs, they affect per-
ceived risk in opposite ways. As an example using the multiplicative
model of Table 5.7, total cost and innovative nature of vendor affect
perceived risk in the same direction while ability to deliver on
schedule affects it in an opposite way.
In summary, according to the Mann-Whitney U results, it is true, as hypothesized, that non-buying firms do perceive more risk than do buying ones. Further, six specific risks such as service and product quality were found to be significant. The risk perceived toward the specific or narrow risk content variables was consistent with the risk perceived toward the overall company. This suggests that the industrial firm members are capable of perceiving specific risks in the offer and then combining these risks in a manner which is consistent with his overall rating. Thus an overall or global measure of perceived risk is not wrong, but it does fail to obtain all the information the firm member is capable of supplying. However, based on the discriminant analysis, the amount and type of risk perceived does not appear to be an effective way to discriminate between buying and non-buying firms. If the product is low-risk these variables may account for 75 to 85 percent of the differences between buying and non-buying firms. For all products, the discrimination was 20 percent or less. Based on the discriminant analysis, it must be concluded that perceived risk, whether it be the uncertainty or the multiplicative model, failed to provide a good basis for discriminating between buy status. Although the results are not entirely one-sided, it appears most correct to accept the null hypothesis that there is no difference in the level and types of risk perceived by buying and non-buying firms.

Testing Hypothesis 2

\( H_{n2} \): Perceived risk will be independent of the length of time purchased from the current source.
A stepwise multiple regression analysis was performed for each of the twenty-one risk content variables as a function of several predictor variables. Length of time purchased from the current source was one of the predictor variables. Statistical significance was established using the sequential F test. Table 5.8 contains the results for the uncertainty model, while Tables 5.9 and 5.10 contain the results for the additive and multiplicative models respectively.

It is evident in Table 5.8 for the uncertainty model that when length of time purchased from the primary source competes with the other predictor variables in the stepwise routine, it has little association with perceived risk. This is true for all of the twenty-one criterion risk categories listed in Table 5.8. None of the regression coefficients were significant which leads to an acceptance of the null hypothesis that perceived risk is independent of the length of time purchased from the current source. Further evidence of this conclusion is present in the low partial correlation coefficients and the contribution to the coefficient of multiple determination. The partials are particularly informative as they indicate that this variable, length of time purchased from the primary source, is not highly associated with perceived risk when it is used as the only predictor variable.

The results in Tables 5.9 and 5.10 are equally conclusive. Neither the additive model nor the multiplicative model found any relationship between perceived risk and length of time purchased from the current vendor. Clearly the null hypothesis should be accepted.
Table 5.8
Perceived Risk as a Function of Time Purchased from Current Source

Uncertainty Model for All Groups

<table>
<thead>
<tr>
<th>Specific Perceived Risk Category as a Dependent Variable</th>
<th>Length of Time Purchased from Primary Source</th>
<th>Partial Correlation Coefficient</th>
<th>Contribution to Multiple R²</th>
<th>Regression Coefficient*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td></td>
<td>0.02</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td></td>
<td>-0.10</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>Salesman's Honesty</td>
<td></td>
<td>-0.05</td>
<td>0.00</td>
<td>-0.01</td>
</tr>
<tr>
<td>Product Performance</td>
<td></td>
<td>-0.02</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.01</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td></td>
<td>-0.11</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td></td>
<td>-0.08</td>
<td>0.00</td>
<td>-0.02</td>
</tr>
<tr>
<td>Product Quality</td>
<td></td>
<td>-0.15</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td></td>
<td>-0.09</td>
<td>0.00</td>
<td>-0.01</td>
</tr>
<tr>
<td>Reciprocity</td>
<td></td>
<td>0.07</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td></td>
<td>-0.05</td>
<td>0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Product Quality</td>
<td></td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
<td>-0.16</td>
<td>0.02</td>
<td>-0.03</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td></td>
<td>-0.12</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td></td>
<td>-0.02</td>
<td>0.00</td>
<td>-0.01</td>
</tr>
<tr>
<td>Salesman Effectiveness</td>
<td></td>
<td>-0.10</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>Overall Rating of Vendor</td>
<td></td>
<td>-0.09</td>
<td>0.01</td>
<td>-0.19</td>
</tr>
<tr>
<td>Sum of the 1st 16 Variables</td>
<td></td>
<td>-0.08</td>
<td>0.00</td>
<td>-0.07</td>
</tr>
<tr>
<td>Sum of the Product Variables</td>
<td></td>
<td>-0.06</td>
<td>0.00</td>
<td>-0.11</td>
</tr>
<tr>
<td>Sum of the Company Variables</td>
<td></td>
<td>0.09</td>
<td>0.00</td>
<td>-0.10</td>
</tr>
</tbody>
</table>

*None of the regression coefficients were significant at the 0.10 level.*
Table 5.9

Perceived Risk as a Function of Time Purchased

from Current Source

Additive Model for All Groups

<table>
<thead>
<tr>
<th>Specific Perceived Risk Category as a Dependent Variable</th>
<th>Length of Time Purchased from Primary Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Partial Correlation Coefficient</td>
</tr>
<tr>
<td>Total Cost</td>
<td>-0.04</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>-0.05</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>-0.02</td>
</tr>
<tr>
<td>Salesman's Honesty</td>
<td>0.00</td>
</tr>
<tr>
<td>Product Performance</td>
<td>0.04</td>
</tr>
<tr>
<td>Service</td>
<td>0.06</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>-0.08</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td>0.00</td>
</tr>
<tr>
<td>Product Quality</td>
<td>-0.07</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>-0.01</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.11</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td>-0.00</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>-0.07</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>-0.18</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>-0.14</td>
</tr>
<tr>
<td>Salesman Effectiveness</td>
<td>0.00</td>
</tr>
<tr>
<td>Overall Rating of Vendor</td>
<td>-0.12</td>
</tr>
<tr>
<td>Sum of the 1st 16 Variables</td>
<td>-0.06</td>
</tr>
<tr>
<td>Sum of the Product Variables</td>
<td>-0.05</td>
</tr>
<tr>
<td>Sum of the Salesman Variables</td>
<td>0.00</td>
</tr>
<tr>
<td>Sum of the Company Variables</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*None of the regression coefficients were significant at the 0.10 level.
<table>
<thead>
<tr>
<th>Specific Perceived Risk Category as a Dependent Variable</th>
<th>Length of Time Purchased from Primary Source</th>
<th>Partial Correlation Coefficient</th>
<th>Contribution to Multiple R^2</th>
<th>Regression Coefficient*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td></td>
<td>0.01</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td></td>
<td>0.03</td>
<td>0.00</td>
<td>0.06</td>
</tr>
<tr>
<td>Salesman Honesty</td>
<td></td>
<td>-0.02</td>
<td>0.00</td>
<td>-0.03</td>
</tr>
<tr>
<td>Product Performance</td>
<td></td>
<td>0.01</td>
<td>0.00</td>
<td>-0.01</td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td></td>
<td>-0.10</td>
<td>0.01</td>
<td>-0.09</td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td></td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.02</td>
</tr>
<tr>
<td>Product Quality</td>
<td></td>
<td>-0.13</td>
<td>0.01</td>
<td>-0.07</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td></td>
<td>-0.05</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Reciprocity</td>
<td></td>
<td>0.09</td>
<td>0.01</td>
<td>0.10</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td></td>
<td>-0.02</td>
<td>0.00</td>
<td>-0.02</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td></td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.07</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td></td>
<td>-0.16</td>
<td>0.02</td>
<td>-0.12</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td></td>
<td>-0.12</td>
<td>0.01</td>
<td>-0.09</td>
</tr>
<tr>
<td>Salesman Effectiveness</td>
<td></td>
<td>0.02</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>Overall Rating of Vendor</td>
<td></td>
<td>-0.10</td>
<td>0.00</td>
<td>-0.05</td>
</tr>
<tr>
<td>Sum of the 1st 16 Variables</td>
<td></td>
<td>-0.07</td>
<td>0.00</td>
<td>-0.38</td>
</tr>
<tr>
<td>Sum of the Product Variables</td>
<td></td>
<td>-0.07</td>
<td>0.00</td>
<td>-0.27</td>
</tr>
<tr>
<td>Sum of the Salesman Variables</td>
<td></td>
<td>-0.02</td>
<td>0.00</td>
<td>-0.11</td>
</tr>
<tr>
<td>Sum of the Company Variables</td>
<td></td>
<td>-0.16</td>
<td>0.00</td>
<td>-0.10</td>
</tr>
</tbody>
</table>

*None of the regression coefficients were significant at the 0.10 level.
Testing Hypothesis 3

\( H_{n3} \): There is no significant relationship between the amount of risk perceived by the buying center member and the extent of his generalized self-confidence, his specific self-confidence and his work experience.

Self-Confidence

The regression results for self-confidence are presented in Table 5.11 for the multiplicative model. The results of the uncertainty and the additive model were similar, but not better than those for the multiplicative one. Therefore, the multiplicative model is representative of the other two.

In Table 5.11 it can be seen that more significant regression coefficients were found for specific self-confidence than for general self-confidence. For this reason it appears that specific self-confidence is a much superior predictor of perceived risk. With one exception (salesman competency) if general self-confidence was significant, then specific self-confidence was also.

Even though significant regressions were found for several of the perceived risk categories, in general the contribution of self-confidence to the coefficient of determination was small. For the generalized self-confidence, only three significant regression coefficients were found, and the highest contribution to the coefficient of multiple determination was seven percent. The remaining two had values of two and three percent. Specific self-confidence, although having thirteen significant regressions, still did not contribute greatly to the prediction of perceived risk. The highest contribution,
Table 5.11
Perceived Risk as a Function of Specific and General Self-Confidence

Multiplicative Model for all Groups

<table>
<thead>
<tr>
<th>Specific Perceived Risk as a Dependent Variable</th>
<th>Specific Self-Confidence</th>
<th>General Self-Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contrib. to R²</td>
<td>1</td>
</tr>
<tr>
<td>Total Cost</td>
<td>0.01</td>
<td>-0.21</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>0.00</td>
<td>-0.10</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>0.04</td>
<td>-0.21</td>
</tr>
<tr>
<td>Salesman Honesty</td>
<td>0.05</td>
<td>-0.22</td>
</tr>
<tr>
<td>Product Performance</td>
<td>0.05</td>
<td>-0.21</td>
</tr>
<tr>
<td>Service</td>
<td>0.03</td>
<td>-0.20</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>0.08</td>
<td>-0.28</td>
</tr>
<tr>
<td>Salesman Dependability of Promises</td>
<td>0.07</td>
<td>-0.26</td>
</tr>
<tr>
<td>Product Quality</td>
<td>0.06</td>
<td>-0.25</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>0.01</td>
<td>-0.11</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.02</td>
<td>-0.18</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td>0.06</td>
<td>-0.14</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>0.05</td>
<td>-0.26</td>
</tr>
<tr>
<td>Vendor Technical Capability</td>
<td>0.04</td>
<td>-0.20</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>0.04</td>
<td>-0.20</td>
</tr>
<tr>
<td>Salesman Effectiveness</td>
<td>0.05</td>
<td>-0.31</td>
</tr>
<tr>
<td>Overall Rating of Vendor</td>
<td>0.06</td>
<td>-0.25</td>
</tr>
<tr>
<td>Sum of 1st 16 Variables</td>
<td>0.10</td>
<td>-0.31</td>
</tr>
<tr>
<td>Sum of Product Variables</td>
<td>0.08</td>
<td>-0.29</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>0.07</td>
<td>-0.26</td>
</tr>
<tr>
<td>Sum of Company Variables</td>
<td>0.08</td>
<td>-0.28</td>
</tr>
</tbody>
</table>

1 - Partial Correlation Coefficient
2 - Regression Coefficient

*Significant at 0.05 level
**Significant at 0.01 level
ten percent, was found for the composite variable which summed the first sixteen items on the questionnaire.

Thus generalized self-confidence appears to be a poor choice for explaining the level and type of risk perceived. Specific self-confidence is superior in that it is significantly related to several of the perceived risks examined in this study. Yet, even it alone is inadequate as the percentage explained variation was never higher than ten percent and the average was six percent. To predict the type and level of risk which is to be perceived by buying decision members requires other predictor variables. For that reason it seems appropriate to accept the null hypothesis that no relationship exists between perceived risk and either specific or generalized self-confidence.

Work Experience

Work experience was even less successful than self-confidence in explaining perceived risk. Two measures of work experience were used, total years of industrial experience and years of departmental experience. Again the results for the uncertainty, additive, and multiplicative models were quite similar, so the multiplicative model was chosen as being representative of all three.

Table 5.12 contains the results for the multiplicative model. Neither the total years of industrial work experience or years of departmental experience predicted much of the risk associated with the perceived risk variables. Even when the regression coefficients were statistically significant, such as for the relationship between
Table 5.12
Perceived Risk as a Function of Work Experience

Multiplicative Model for All Groups

| Specific Perceived Risk as a Dependent Variable | Total Years of Ind. Exp. | | | Years of Dept. Experience | | | |
| | Contrib. to $R^2$ | 1 | 2 | Contrib. to $R^2$ | 1 | 2 |
| Total Cost | 0.01 | 0.03 | 0.03 | 0.00 | 0.03 | 0.02 |
| Ability to Deliver on Schedule | 0.00 | -0.10 | -0.06 | 0.10 | -0.02 | 0.06 |
| Innovative Nature of Vendor | 0.02 | -0.14 | -0.04* | 0.00 | -0.13 | -0.02 |
| Salesman Honesty | 0.00 | -0.12 | -0.03 | 0.01 | -0.15 | -0.04 |
| Product Performance | 0.00 | 0.08 | 0.01 | 0.01 | 0.08 | 0.04 |
| Service | 0.01 | -0.15 | -0.07 | 0.00 | -0.11 | 0.04 |
| Vendor Dependability of Promises | 0.02 | -0.08 | -0.09 | 0.01 | 0.03 | 0.13* |
| Salesman Dependability of Promises | 0.00 | -0.08 | -0.04 | 0.00 | -0.04 | 0.05 |
| Product Quality | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.03 |
| Capability of Supplying Future Demand | 0.00 | -0.11 | -0.06 | 0.00 | -0.03 | 0.06 |
| Reciprocity | 0.04 | -0.21 | -0.08* | 0.00 | 0.00 | 0.00 |
| Salesman Competency | 0.08 | -0.04 | -0.05 | 0.07 | 0.07 | 0.06 |
| Product Quality Consistency | 0.00 | 0.08 | 0.01 | 0.01 | 0.09 | 0.05 |
| Vendor Technical Capability | 0.00 | -0.01 | -0.02 | 0.00 | 0.03 | 0.05 |
| Emergency Assistance | 0.00 | -0.03 | -0.03 | 0.00 | 0.02 | 0.04 |
| Salesman Effectiveness | 0.01 | 0.01 | 0.03 | 0.01 | 0.07 | 0.07 |
| Overall Rating | 0.02 | -0.03 | -0.06 | 0.02 | 0.10 | 0.10* |
| Sum of 1st 16 Variables | 0.00 | -0.08 | -0.41 | 0.00 | -0.04 | 0.42 |
| Sum of Product Variables | 0.00 | 0.07 | 0.07 | 0.01 | 0.08 | 0.28 |
| Sum of Salesman Variables | 0.01 | -0.08 | -0.34 | 0.00 | -0.04 | -3.09 |
| Sum of Company Variables | 0.01 | -1.16 | -0.43 | 0.01 | -0.07 | 0.34 |

1 - Partial Correlation Coefficient
2 - Regression Coefficient
*Significant at the 0.05 level
total years of industrial work experience and the risk perceived for reciprocity, the explained variation was never very high. For the significant relationships the contribution to the multiple coefficient of determination was never higher than four percent which is not adequate assistance to a decision maker using perceived risk as a basis for action. Clearly this part of the null hypothesis should be accepted which means no relationship exists between perceived risk and work experience.

Testing Hypothesis 4

$H_{n4}$: No significant relationship exists between a firm's perceived risk and the tendency for the firm to have or to be considering a formal vendor performance analysis program.

Existing Program

Perceived risk researchers have based their research on the notion that the buyer tries to reduce perceived risk to some manageable level. The rise of a formal vendor performance analysis program is a plausible method for the buyer or buying firm to reduce risk. Thus the existence of a formal analysis program should be negatively correlated with perceived risk. Table 5.13 presents the results of this analysis for the multiplicative model which is representative of the other two. The data in Table 5.13 shows that perceived risk is inversely related to the existence of a formal performance analysis program for ten risk categories such as total cost, service, etc. Even though significant relationships were found for
Table 5.13

Perceived Risk as a Function of Formal Vendor Performance Analysis Program

Multiplicative Model for All Groups

<table>
<thead>
<tr>
<th>Specific Perceived Risk As a Dependent Variable</th>
<th>Program in Existence</th>
<th>Programme Planned for Next Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contrib. to R² 1 2</td>
<td></td>
</tr>
<tr>
<td>Total Cost</td>
<td>0.02 -0.18 -1.18*</td>
<td>0.01 0.04 -0.45</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>0.02 -0.17 -1.17</td>
<td>0.00 0.03 -0.31</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>0.02 -0.15 -1.38*</td>
<td>0.02 -0.06 -0.72*</td>
</tr>
<tr>
<td>Salesman Honesty</td>
<td>0.00 -0.11 -0.79</td>
<td>0.01 -0.01 -0.36</td>
</tr>
<tr>
<td>Product Performance</td>
<td>0.01 -0.12 -0.70</td>
<td>0.01 0.03 -0.31</td>
</tr>
<tr>
<td>Service</td>
<td>0.05 -0.23 -2.21**</td>
<td>0.04 -0.07 -1.04*</td>
</tr>
<tr>
<td>Vendor Dependability of Promises</td>
<td>0.04 -0.25 -1.61*</td>
<td>0.01 0.05 -0.37</td>
</tr>
<tr>
<td>Salesman Dependability of Promises</td>
<td>0.02 -0.18 -0.95</td>
<td>0.00 0.07 -0.08</td>
</tr>
<tr>
<td>Product Quality</td>
<td>0.01 -0.15 -1.02*</td>
<td>0.01 0.02 0.46</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>0.07 -0.26 -3.55**</td>
<td>0.07 -0.10 -1.70**</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.01 -0.02 -0.58</td>
<td>0.02 -0.15 -0.82*</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td>0.07 -0.03 -0.54</td>
<td>0.05 -0.09 -0.65</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>0.01 -0.14 -1.22*</td>
<td>0.02 -0.02 -0.80*</td>
</tr>
<tr>
<td>Vendor Technical Capability</td>
<td>0.01 -0.09 -0.89</td>
<td>0.01 -0.07 -0.70</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>0.00 0.01 0.11</td>
<td>0.01 -0.05 -0.32</td>
</tr>
<tr>
<td>Salesman Effectiveness</td>
<td>0.00 -0.07 -0.53</td>
<td>0.00 -0.01 -0.45</td>
</tr>
<tr>
<td>Overall Rating</td>
<td>0.02 -0.11 -0.85</td>
<td>0.01 -0.04 -0.59</td>
</tr>
<tr>
<td>Sum of 1st 16 Variables</td>
<td>0.03 -0.22 -18.19**</td>
<td>0.03 -0.03 -9.11*</td>
</tr>
<tr>
<td>Sum of Product Variables</td>
<td>0.02 -0.18 -8.26*</td>
<td>0.01 0.02 -4.02</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>0.00 -0.13 -5.63</td>
<td>0.01 -0.01 -3.09</td>
</tr>
<tr>
<td>Sum of Company Variables</td>
<td>0.03 -0.23 -11.30**</td>
<td>0.05 0.08 -5.96**</td>
</tr>
</tbody>
</table>

1 - Partial Correlation Coefficient

2 - Regression Coefficient

*Significant at 0.05 level

**Significant at 0.01 level
ten predictor variables, the null hypothesis should still be accepted rather than rejected. This acceptance is based on the fact that the predictor variable, existence of formal evaluation program, failed to explain a large amount of the variation found in the criterion variable. For example, only two percent of the variation in total cost was explained by the independent variable. This degree of explanation is not adequate for management to make decisions. For this reason, the null hypothesis is accepted with the conclusion being that no relationship exists between the existence of a formal vendor performance analysis program and the level of risk perceived.

Planned Program

A planned introduction of a formal vendor performance analysis program would seem to suggest a high level of perceived risk. This risk would remain until the program is implemented and shown to work according to this hypothesis. As can be noted in Table 5.13, the opposite result was obtained. All of the seven significant regression coefficients are negative which means that even a proposed evaluation program lowers today's perception of risk. Or, alternatively, the statement of current perceived risk level includes a judgment about the risk perceived for next year. It seems entirely possible for the risk perceived to be more a function of what is to be purchased rather than what is or has been purchased. Since the proposed vendor evaluation program is expected to be very successful (otherwise it would not be implemented), the risk for next year should be very reduced.
The value of this finding needs additional discussion. Seven regression coefficients were significant, suggesting that the risk perceived toward innovative nature of vendor, etc. are importantly related to the planned vendor evaluation program. However, the explained variation or contribution to the coefficient of multiple determination was very small. The average was only three percent which precludes utility to management. For this reason, the null hypothesis is accepted and it is concluded no relationship exists between perceived risk and the planning of a formal vendor analysis program.

**Testing Hypothesis 5**

\[ H_{n^5} : \text{There is no significant relationship between perceived risk and a buying center member's perception of his own influence and responsibility.} \]

Perceived Influence

It is intuitive that perceived risk should increase as the respondent perceives more influence for himself. However, this was not substantiated by the data as can be seen in Table 5.14. None of the regression coefficients were statistically significant. In addition, the contribution of perceived responsibility to the coefficient of multiple determination was generally zero. Clearly this part of the null hypothesis is to be accepted; there is no relationship between perceived influence and perceived risk.
Table 5.14

**Perceived Risk as a Function of Perceived Responsibility and Perceived Influence**

**Multiplicative Model for All Groups**

<table>
<thead>
<tr>
<th>Specific Perceived Risk As a Dependent Variable</th>
<th>Perceived Responsibility</th>
<th>Perceived Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contrib. to $R^2$</td>
<td>1</td>
</tr>
<tr>
<td>Total Cost</td>
<td>0.09</td>
<td>-0.30</td>
</tr>
<tr>
<td>Ability to Deliver on Schedule</td>
<td>0.05</td>
<td>-0.21</td>
</tr>
<tr>
<td>Innovative Nature of Vendor</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Salesman Honesty</td>
<td>0.00</td>
<td>-0.07</td>
</tr>
<tr>
<td>Product Performance</td>
<td>0.00</td>
<td>-0.08</td>
</tr>
<tr>
<td>Service</td>
<td>0.00</td>
<td>-0.07</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>0.00</td>
<td>-0.23</td>
</tr>
<tr>
<td>Salesman Dependability of Promises</td>
<td>0.00</td>
<td>-0.11</td>
</tr>
<tr>
<td>Product Quality</td>
<td>0.00</td>
<td>-0.11</td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td>0.00</td>
<td>-0.02</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.01</td>
<td>-0.04</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td>0.07</td>
<td>-0.01</td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>0.00</td>
<td>-0.09</td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>0.01</td>
<td>-0.05</td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td>0.01</td>
<td>-0.04</td>
</tr>
<tr>
<td>Salesman Effectiveness</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Overall Rating</td>
<td>0.01</td>
<td>-0.06</td>
</tr>
<tr>
<td>Sum of last 16 Variables</td>
<td>0.00</td>
<td>-0.14</td>
</tr>
<tr>
<td>Sum of Product Variables</td>
<td>0.00</td>
<td>-0.18</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>0.00</td>
<td>-0.09</td>
</tr>
<tr>
<td>Sum of Company Variables</td>
<td>0.00</td>
<td>-0.12</td>
</tr>
</tbody>
</table>

1 - Partial Correlation Coefficient

2 - Regression Coefficient

*Significant at 0.05 level

**Significant at 0.01 level
Perceived Responsibility

Perceived responsibility would intuitively appear to be positively related to perceived risk. However, the results given in Table 5.14 contradict this supposition. Total cost and ability to deliver on schedule were found to vary inversely with perceived responsibility. As perceived responsibility increases, the risks perceived for these dependent variables decreases. This seems to suggest that the individual buying member is confident in his judgment and his confidence is not altered, and may be enhanced by the responsibility he perceives toward the specific risk. Also, the research instrument may not have measured what was intended.

In a way, attempting to explain these negative regression coefficients may be wasteful, for neither explained enough of the total variation to really be a useful management tool. Perceived responsibility, given only three significant regression coefficients with an average contribution to $R^2$ of only seven percent, is not very useful. For all practical purposes, this null hypothesis should be accepted which states that there is no significant relationship between perceived risk and perceived responsibility and perceived influence.

Testing Hypothesis 6

$H_0$: There is no significant relationship between role position and the amount of risk perceived toward product characteristics.

The first analysis was a stepwise multiple discriminant analysis using the three role positions, purchasing agent, scientist, and
manager as the discriminant groupings or categorically scaled criterion variable. All twenty-one of the specific risk content variables were used with an entering sequence based on their relative discriminating power. Statistical significance was established using the sequential F test. The best results were obtained with the uncertainty and multiplicative models and these data are presented in Table 5.15.

Table 5.15

Discriminant Analysis of Role Position for All Products

<table>
<thead>
<tr>
<th>Perceived Risk Variable</th>
<th>Uncertainty Model</th>
<th>Multiplicative Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>-0.37*</td>
<td>2</td>
</tr>
<tr>
<td>Ability to Deliver on Sch.</td>
<td>-0.76*</td>
<td>1</td>
</tr>
<tr>
<td>Innovative Nature of Ven.</td>
<td>0.16*</td>
<td>3</td>
</tr>
<tr>
<td>Product Performance</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salesman's Dependability of Promises</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capability of Supplying Future Demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reciprocity</td>
<td>0.13*</td>
<td>4</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Product Quality Consistency</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Vendor's Technical Capability</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>Emergency Assistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salesman's Effectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Rating</td>
<td>-0.36</td>
<td></td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td>-0.18</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

Uncertainty Model Canonical Correlation Coefficient - 0.36
Multiplicative Model Canonical Correlation Coefficient - 0.42
Examining Table 5.15, it is evident that these twenty-one perceived risk variables did not discriminate effectively between the three role positions as the canonical correlation coefficients for the uncertainty and multiplicative models were respectively only 0.36 and 0.42. According to the discriminant analysis, a vendor would not need to concern himself greatly with the differences in risk perceived by the various role occupant. This conclusion is further supported by an examination of the degree to which the discriminant program could correctly classify each of the role positions. Explaining this further, if the risks perceived by a respondent were analyzed by the discriminant program, what was the probability that the respondent would be correctly classified as a purchasing agent, scientist, or manager. These data are given in Table 5.16. Except for the classification of managers in the uncertainty model, the percentage correctly classified is higher than chance alone. Nonetheless, the actual percentages for the other roles are not high enough to be very useful in management decision making. Although no absolute standards exist for the required classificatory correctness, an improvement of at least twenty-five percent seems in order if management were to benefit.

Examining the product variables referred to in Hypothesis Six, quality, quality consistency, performance, and sum of the product characteristics, it can be seen that none were significant in the uncertainty model, suggesting that a vendor should devote his incremental attention to other variables. More importance for quality and quality consistency is shown by the multiplicative model as these two
## Table 5.16

Classification Correctness by Discriminant Analysis

of Role Position for All Products

<table>
<thead>
<tr>
<th>Role Position</th>
<th>Uncertainty Model</th>
<th>Multiplicative Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of</td>
<td>Percentage of</td>
</tr>
<tr>
<td></td>
<td>Respondents</td>
<td>Respondents</td>
</tr>
<tr>
<td></td>
<td>Correctly</td>
<td>Correctly</td>
</tr>
<tr>
<td></td>
<td>Classified</td>
<td>Classified</td>
</tr>
<tr>
<td>Purchasing Agent</td>
<td>28</td>
<td>49</td>
</tr>
<tr>
<td>Scientist</td>
<td>28</td>
<td>53</td>
</tr>
<tr>
<td>Manager</td>
<td>15</td>
<td>46</td>
</tr>
</tbody>
</table>
had significant discriminant weights. These significant relationships seem to be of little value given the low overall discriminating power of the risk content variables. Although statistically significant, these variables do not explain sufficient variance to be useful to management. Therefore, based on the discriminant analysis, the null hypothesis should be accepted which infers that the risks perceived by the various role positions are all identical.

A second type of analysis was also performed. Consistently, the purchasing agent perceived less risk toward the product than did the other two role positions. Generally, the scientist and manager exhibited very similar risks, but this is not surprising as the manager, as defined in this research, was technically trained and proficient. Thus, the second analysis was based on the comparison of the purchasing agent's perceived risks to those perceived by the other two role positions. To establish statistical significance for the comparisons, the standardized variable Z test with pooled variances was used. For each perceived risk measure, the purchasing agent's mean was compared to the higher of the other two role positions. These results are presented in Tables 5.17 through 5.20. Given in these tables are the means and standard deviation by role position. Significant Z scores are noted at the bottom of each table.

Although the purchasing agent always perceived the lowest risk toward the product characteristics given in Tables 5.17 through 5.20, the difference between his perception and the other two role positions
### Table 5.17

**Risk Perceived Toward Product Performance as a Function of Role Position**

<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>P.A.</th>
<th>Scientist</th>
<th>Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>Importance</td>
<td>4.76</td>
<td>0.83</td>
<td>4.91</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>1.51</td>
<td>0.82</td>
<td>1.59</td>
</tr>
<tr>
<td>Additive</td>
<td>6.27</td>
<td>1.14</td>
<td>6.49</td>
</tr>
<tr>
<td>Multiplicative</td>
<td>7.00</td>
<td>3.63</td>
<td>7.63</td>
</tr>
</tbody>
</table>

Note: There was no significant difference between the means for the three role positions at the 90% confidence level using the Z test.

### Table 5.18

**Risk Perceived Toward Product Quality Consistency as a Function of Role Position**

<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>P.A.</th>
<th>Scientist</th>
<th>Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>Importance</td>
<td>4.67</td>
<td>0.77</td>
<td>4.92</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>1.55</td>
<td>0.84</td>
<td>1.60</td>
</tr>
<tr>
<td>Additive</td>
<td>6.22</td>
<td>1.16</td>
<td>6.53</td>
</tr>
<tr>
<td>Multiplicative</td>
<td>7.35</td>
<td>4.28</td>
<td>7.91</td>
</tr>
</tbody>
</table>

Note: There was no significant difference between the means for the three role positions at the 90% confidence level using the Z test.
### Table 5.19
**Risk Perceived Toward Product Quality as a Function of Role Position**

<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>Role Position</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P.A. Scientist</td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Manager</td>
</tr>
<tr>
<td>Importance</td>
<td></td>
<td>4.69*</td>
<td>0.80</td>
<td>4.96</td>
</tr>
<tr>
<td>Uncertainty</td>
<td></td>
<td>1.39</td>
<td>0.01</td>
<td>1.49</td>
</tr>
<tr>
<td>Additive</td>
<td></td>
<td>6.08*</td>
<td>3.03</td>
<td>7.38</td>
</tr>
<tr>
<td>Multiplicative</td>
<td></td>
<td>6.47</td>
<td>3.03</td>
<td>7.38</td>
</tr>
</tbody>
</table>

*Purchasing Agent's mean differs from Scientist's at 90% confidence level using Z test.

### Table 5.20
**Perceived Risk for Sum of Product Characteristics as a Function of Role Position**

<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>Role Position</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P.A. Scientist</td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Manager</td>
</tr>
<tr>
<td>Importance</td>
<td></td>
<td>37.1</td>
<td>5.15</td>
<td>38.2</td>
</tr>
<tr>
<td>Uncertainty</td>
<td></td>
<td>11.8</td>
<td>4.51</td>
<td>13.1</td>
</tr>
<tr>
<td>Additive</td>
<td></td>
<td>48.9*</td>
<td>6.51</td>
<td>51.2</td>
</tr>
<tr>
<td>Multiplicative</td>
<td></td>
<td>54.0</td>
<td>22.71</td>
<td>61.2</td>
</tr>
</tbody>
</table>

*Purchasing Agent's mean differs from Scientist's at 90% confidence level using Z test.
was of little consequence for several reasons. First, examining Tables 5.17 and 5.18, it can be seen that the differences in risks perceived by these role occupants were not significant for product performance and quality consistency categories. Next, the significant differences found for product quality and sum of the product characteristics were for the importance component and the additive model. Neither of these has an acceptance in the literature nor has shown much predictive power in the previously discussed hypothesis. For the more accepted uncertainty and multiplicative models, not one of the differences was significant. This is a major basis for concluding that the differences, although always present with the purchasing agent perceiving the high risk, have little value.

A final consideration in this conclusion was the failure, using the Z test, to find a significant difference for quality consistency. The multiplicative model in the discriminant analysis indicated that this variable was second in importance. One explanation is that although quality consistency was significant, the overall or total discriminating power of the discriminant equation was very weak and therefore the significance of the individual discriminant coefficients is really in question. Collectively they explained little of the variance between the predictor and criterion groups. Thus, in the final analysis, the differences in risks perceived by the product characteristics are unimportant and the null hypothesis is accepted.
Testing Hypothesis 7

$H_{n7}$: There is no significant relationship between role position and the amount of risk perceived toward total cost.

Significance testing for Hypothesis 7 involved the same statistical tests as used for the previous hypothesis. There were discriminant analysis and the standardized Z test for differences between means.

In the discriminant analysis, total cost was found to be very important in the uncertainty model, but was not significant in the multiplicative model as can be seen in Table 5.15. Since the canonical correlation of all twenty-one risk content variables was only 0.36, the discriminating power of total cost is very low. Therefore, based on the discriminant analysis, it is necessary to accept the null hypothesis and state that no relationship exists between role position and the amount of risk perceived toward total cost.

Before terminating the discussion, it appears worthwhile to examine the results of the Z test which are presented in Table 5.21. Total cost is a very significant variable in the uncertainty model, as the purchasing agent's mean is much lower than the other two. This reinforces the high relative importance rating, number two, found for total cost in the discriminant analysis. Based on these two separate tests, a valid conclusion is to reject the null hypothesis and conclude that role position does influence the amount of risk perceived toward total cost. Certainly the differences presented in Table 5.21 were very significant: 98 percent confidence for the uncertainty and
Table 5.21  
Risk Perceived for Total Cost as a Function of Role Position

<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>P.A. Mean (Std. Dev.)</th>
<th>Scientist Mean (Std. Dev.)</th>
<th>Manager Mean (Std. Dev.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>4.45 (0.87)</td>
<td>4.32 (0.85)</td>
<td>4.35 (0.85)</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>1.45 (0.71)</td>
<td>1.87 (1.02)</td>
<td>1.91 (1.00)</td>
</tr>
<tr>
<td>Additive</td>
<td>5.90 (0.85)</td>
<td>6.15 (.95)</td>
<td>6.26 (.98)</td>
</tr>
<tr>
<td>Multiplicative</td>
<td>6.18 (2.77)</td>
<td>7.66 (4.12)</td>
<td>7.93 (3.77)</td>
</tr>
</tbody>
</table>

\(^a\)Purchasing agent's mean differs from scientist's at 98% confidence level using the Z test.

\(^b\)Manager's mean is higher than purchasing agent's mean at 90% confidence level using the Z test.

\(^c\)Manager's mean is higher than purchasing agent's mean at 98% confidence level using the Z test.

Examining Table 5.21, an important insight is available for management. According to the importance model, all view the importance of total cost with equal concern. Yet, the people who actually use the product, the scientist and manager, are uncertain that they know the total cost. Is this a failure of the vendor or the purchasing department? How difficult it is to select a vendor when one of the most important variables is not clear to you. This appears to be the plight of the technical staff and contains a message for both the
supplying and buying firms, make sure all of the buying center members are well-versed in the total costs of the products.

Testing Hypothesis 8

$H_{n8}$: There is no significant difference in the levels of risk perceived for the salesman, the company, and the product.

Salesmen are generally viewed as being low in credibility. To test this view of the salesman, and more specifically, to test whether or not the salesman was less credible than the company he represents and the product he sells, the composite risk variables were compared using a difference-between-means test. The composite risk variables studied were sum of the product characteristics, sum of the company characteristics, and sum of the salesman characteristics. Table 5.22 contains the results for the analysis of all of the respondents.

It might be noted first that the salesman is not considered to be as important as the product or the company. Most important are the product characteristics as the highest mean was found for this category. The difference in importance between the product and salesman characteristics was highly significant whereas the difference in importance between the salesman and company characteristics was not at all significant.

That the salesman is risky is attested to by the uncertainty and composite models. In these three models the salesman has the highest mean. The difference between the salesman and product characteristics was significant for both the uncertainty and multiplicative
Table 5.22

Mean Risks Perceived by All Respondents

<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>Sum of Product Characterist.</th>
<th>Sum of Salesman Characterist.</th>
<th>Sum of Company Characterist.</th>
<th>Z score Difference Between Sum of Salesman Characteristics and Sum of Product Characteristic</th>
<th>Sum of Company Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>Mean 37.7 Std. Dev. 3.51</td>
<td>Mean 30.6 Std. Dev. 5.62</td>
<td>Mean 31.0 Std. Dev. 4.58</td>
<td>13.0**</td>
<td>0.61</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>Mean 12.8 Std. Dev. 5.14</td>
<td>Mean 19.0 Std. Dev. 7.71</td>
<td>Mean 18.1 Std. Dev. 6.00</td>
<td>8.23**</td>
<td>1.16</td>
</tr>
<tr>
<td>Additive</td>
<td>Mean 50.5 Std. Dev. 5.59</td>
<td>Mean 49.7 Std. Dev. 7.02</td>
<td>Mean 49.1 Std. Dev. 5.72</td>
<td>1.06</td>
<td>0.81</td>
</tr>
<tr>
<td>Multiplicative</td>
<td>Mean 59.1 Std. Dev. 23.8</td>
<td>Mean 68.3 Std. Dev. 25.9</td>
<td>Mean 63.0 Std. Dev. 21.3</td>
<td>3.31*</td>
<td>2.03*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level using two-tailed Z test.

**Significant at the 0.01 level using two-tailed Z test.
models. Thus the null hypothesis is rejected and it is concluded that the product generates less risk than the salesman.

Using the multiplicative model as the basis, a similar conclusion can be made that the company is viewed with less risk than the salesman. The strength of the support for this conclusion can be challenged in that the difference in the uncertainty model was not significant. This criticism is acknowledged, but it should be noted that the mean for the salesman was higher than the one for the company. Although not significant, at least the difference was in the same direction for both the uncertainty and multiplicative models.

When the individual role positions were studied, the results were generally consistent with the overall findings. These findings are presented in Tables 5.23 through 5.25. Scientists, managers, and purchasing agents all perceive the highest risk with the salesman. Also, all three consider product characteristics to be more important than company characteristics. None saw a significant difference between the salesman characteristics and the company characteristics. For this reason it seems best to conclude, given all the evidence from the overall and individual role position analyses, that no difference exists in the level of risk perceived for the company and salesman. There is a difference, however, between the salesman and the product with the salesman perceived as more risky.

Many times, the reason one firm is selected over another is the fact that everything is equal except credibility of the salesman. This notion was documented extremely well in the literature cited
<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>Sum of Product Characterist.</th>
<th>Sum of Salesman Characterist.</th>
<th>Sum of Company Characterist.</th>
<th>Z Score Difference Between Sum of Salesman Characteristics and Sum of Product Characteristic</th>
<th>Z Score Difference Between Sum of Salesman Characteristics and Sum of Company Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>Importance</td>
<td>37.1</td>
<td>5.15</td>
<td>30.9</td>
<td>6.34</td>
<td>30.8</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>11.8</td>
<td>4.51</td>
<td>17.5</td>
<td>7.97</td>
<td>16.8</td>
</tr>
<tr>
<td>Additive</td>
<td>48.9</td>
<td>6.51</td>
<td>48.4</td>
<td>6.44</td>
<td>47.6</td>
</tr>
<tr>
<td>Multiplicative</td>
<td>54.0</td>
<td>22.71</td>
<td>62.2</td>
<td>23.9</td>
<td>57.2</td>
</tr>
</tbody>
</table>

*Significant at the 0.10 level using a two-tailed Z test.

**Significant at the .01 level using a two tailed Z test.
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>3.82</td>
<td>2.03</td>
<td>31.0</td>
<td>5.56</td>
<td>8.87*</td>
<td>0.49</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Uncertainty</td>
<td>13.1</td>
<td>6.01</td>
<td>18.9</td>
<td>6.86</td>
<td>4.64*</td>
<td>0.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additive</td>
<td>51.2</td>
<td>5.44</td>
<td>39.9</td>
<td>7.19</td>
<td>1.74*</td>
<td>0.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiplicative</td>
<td>61.2</td>
<td>26.9</td>
<td>70.2</td>
<td>25.6</td>
<td>1.76*</td>
<td>1.41</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Significant at the 0.10 level using a two-tailed Z test.

**Significant at the 0.01 level using a two-tailed Z test.
Table 5.25

Mean Risks Perceived by Managers

<table>
<thead>
<tr>
<th>Perceived Risk Model</th>
<th>Sum of Product Characterist.</th>
<th>Sum of Salesman Characterist.</th>
<th>Sum of Company Characterist.</th>
<th>Z Score Difference Between Sum of Salesman Characteristics and Sum of Product Characteristic</th>
<th>Sum of Company Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
<td>Std. Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>Importance</td>
<td>37.8</td>
<td>2.57</td>
<td>29.9</td>
<td>4.92</td>
<td>30.6</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>13.4</td>
<td>4.59</td>
<td>20.8</td>
<td>8.14</td>
<td>19.7</td>
</tr>
<tr>
<td>Additive</td>
<td>51.2</td>
<td>4.37</td>
<td>50.7</td>
<td>7.38</td>
<td>50.3</td>
</tr>
<tr>
<td>Multiplicative</td>
<td>62.0</td>
<td>20.6</td>
<td>73.7</td>
<td>27.4</td>
<td>68.4</td>
</tr>
</tbody>
</table>

*Significant at the 0.05 level using a two-tailed Z test.

**Significant at the 0.01 level using a two-tailed Z test.
earlier in this report. Clearly, this research confirms the necessity for every firm and every salesman to use all of their communicative skills to raise the credibility of the one person contacting the customer and prospective customer.

Discussion

Although some of the specific research hypotheses were tentatively supported, others were rejected or, at best, weakly supported. Additional perspective for these results can be obtained by a supplemental analysis which is not specifically related to the individual hypotheses.

Risk Content Variables

As was cited earlier in this paper, previous scholars have proposed that a global measure of perceived risk may be inadequate. Following this lead, twenty-one different perceived risks were examined. The results obtained were less than anticipated.

Using the data presented in Hypothesis 8, an argument can be made to use at least two categories--product and salesman or possibly product and another variable combining salesman and company. Consistently the salesman was viewed as being higher in risk than was the product.

However, the number or the identity of the categories to use remains uncertain. The two categories just discussed were not strong predictors in the regression and discriminant analyses. Indeed, collectively the twenty-one specific risk content variables studied
explained little of the variance in perceived risk measured. This causes one to suspect that the perceived risk concept, researched by others in the global view and here in a more focused manner, may not really be useful in explaining buyer behavior to the extent initially suggested by the early researchers.

The Perceived Risk Models

Two perceived risk models are prevalent in the literature. One concerns itself only with the uncertainty component and the second uses the product of the uncertainty and importance components. A third model, which added these two components, was included in this research. Of the three models, the additive model produced the least number of significant findings. For the two prevalent models, it is impossible from this research to select one as being better than the other. This is because neither was found to be capable of explaining why a given firm prefers Vendor A instead of B.

Rather than present an expansive argument to justify the selection of one model over the other, it appears appropriate to suggest new directions for future research. Much research has used the perceived risk format. Notwithstanding the cogent theoretical appeal, the results have not substantially improved the understanding of buyer behavior. For this reason, future research may be more propitious if based on a research concept other than perceived risk.
Personal Characteristics

Perceived risk is intuitively a phenomenon depending upon personal characteristics. Four characteristics, general and specific self-confidence, departmental work experience and total industrial work experience were examined in this research.

Work experience would intuitively reduce the level of risk perceived. However, the findings did not corroborate this intuitive supposition. Even generalized self-confidence, an often used variable, failed to explain the perception of risk. Specific self-confidence was the best of the four but on the average only accounted for six percent of the observed variation in buying behavior. Therefore, additional research cannot be recommended. Personal variables not specific to the purchasing task, such as generalized self-confidence, have consistently failed to be of value in all perceived risk studies to date.

Role Position

Collectively, the twenty-one specific risk content variables did not effectively discriminate between the three role positions. Canonical correlation coefficients for the uncertainty and multiplicative models were respectively only 0.36 and 0.42. Thus the role position is not particularly influential for the products studied. This is surprising. Possibly the background experiences of the purchasing agent, scientist, and manager are very similar. As the products were all chemical intermediates, it is quite possible that even the
purchasing member of the buying center had formal and/or on-the-job technical training which could account for the similar perceptions.

Background experience is only one facet; another is the perspective required by the position. Purchasing department goals do vary from scientist's work goals. This goal incongruence seems sufficient to produce significant perceived risk differences even though sufficient differences were not found to make the discriminant analysis highly successful as an overall model. By examining the significant risk content variables in the discriminant results, it is evident that role position does have some effect on the perception of specific risks such as total cost, reciprocity, etc.

Additional support for the effect of role position on risk perception was garnered by examining the differences between the means for the various role positions. In general, the manager and scientist exhibited very similar risk levels. This result was expected since the manager was technically knowledgeable. With the perspective of the purchasing personnel expected to be different than that of the manager or scientist, it is not surprising to find several variables which indicated a significant difference between the purchasing agent and the other two role positions. Even when the difference was not significant, the purchasing agent always perceived the lowest risk.

Besides departmental perspective differences, another force may be involved. Insufficient information produces uncertainty, and information search is a method of reducing uncertainty. Consistently the manager and scientist perceived more uncertainty than did the
purchasing agent. This suggests that these technically oriented personnel are receiving insufficient information or at least believe they are. Even for low risk products, the scientist and managers viewed the product characteristics with more risk than did the purchasing representative. Consequently, irrespective of the product's complexity or riskiness, the scientist and manager are desirous of more product information.

To the extent that these two role occupants are primary in the selection decision, every vendor can increase his probability of being selected by increasing his communication to these buying center members. As only a few perceived risk categories are significant, the incremental increase in communication needs to be intensive rather than extensive. In other words, role position does indeed influence the perception of certain risks. As the number of specific risks is low, management has a useful focus for its communicative efforts to produce more sales.

Risk Perceived Toward the Salesman

In communication it is well established that the salesman is the most persuasive of all communicative tools. There is ample room for improvement, particularly in the area of credibility. All three of the role positions consider the salesman to be more risky than the company or the product.

Several implications are derivable from this most significant corroboration of previous research findings. First, the salesman can be viewed as one who creates an environment in which an act of faith can take place, notably the buy-sell transaction. In industrial sales,
this environment cannot be created instantly or with one sales call. Trust will be obtained only after several successful experiences. Thus, a salesman must be associated with a string of several successes over a period of time before risk can really be reduced. Yet, some salesmen convey or exhibit an honesty which is contagious. Salesmen having this quality would be expected to have less risk associated with them than salesmen not having this quality.

Next, the salesman needs to be supplemented by other communication vehicles which are more credible or have less risk associated with them. As less risk is associated with the company, every claim or every promise made by the salesman at the time of the call needs to be confirmed by the vendor in some additional way. Every risk must be anticipated and a written, or otherwise credible answer from the company must be presented at the time the risk is exhibited to the salesman.

Another variable is the quality of the sales presentation. The exact influence of the quality is complex according to Levitt, but it is obvious that a poor presentation does influence one or more of the buying center members regardless of the type of product. Thus the salesman can reduce the risk perceived toward him with a quality sales presentation.

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126 Levitt, pp. 27-28.
Product Type

Some researchers have suggested that the type and level of risk perceived is a function of the product's riskiness. Although not a major thrust of this research, this supposition was examined using a stepwise discriminant analysis with the three products as criterion groups.

As can be seen by the low canonical correlation coefficients in Table 5.26, an effective discrimination was not achieved. For the significant perceived risk variables, product quality, product performance, and product quality consistency are three of the more important ones.

Certainly the low risk product had the most consistent quality as it had been produced for many years and is a relatively simple compound. In contrast, the high risk product is relatively new and is much more complex in molecular structure. The importance of these particular three variables lends credence to the notion that perceived risk level varies with the riskiness of the product. The failure of the canonical correlations to be higher may be caused by insufficient variation in actual risk levels of the selected products.

Buy Status

One of the most salient findings of this research is that perceived risk appears to vary with buy status. Other researchers have failed to support this hypothesis and the support found in this investigation was not conclusive. Undoubtedly one reason for the
Table 5.26
Discriminant Analysis of Product Type

<table>
<thead>
<tr>
<th>Perceived Risk Variable</th>
<th>Uncertainty Model</th>
<th></th>
<th>Multiplicative Model</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovative Nature of Vendor</td>
<td>-0.08</td>
<td>10</td>
<td>-0.07</td>
<td>7</td>
</tr>
<tr>
<td>Salesman Honesty</td>
<td>0.40</td>
<td>8</td>
<td>0.10</td>
<td>6</td>
</tr>
<tr>
<td>Product Performance</td>
<td>-0.96</td>
<td>3</td>
<td>-0.184</td>
<td>3</td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td></td>
<td>-0.04</td>
<td>8</td>
</tr>
<tr>
<td>Vendor's Dependability of Promises</td>
<td>-0.61</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salesman Dependability</td>
<td>-0.55</td>
<td>5</td>
<td>-0.23</td>
<td>1</td>
</tr>
<tr>
<td>Product Quality</td>
<td>1.11</td>
<td>2</td>
<td>0.21</td>
<td>2</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>-0.42</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Quality Consist.</td>
<td>-1.16</td>
<td>1</td>
<td>-0.16</td>
<td>4</td>
</tr>
<tr>
<td>Salesman Competency</td>
<td>0.43</td>
<td>6</td>
<td>0.14</td>
<td>5</td>
</tr>
<tr>
<td>Sum of Salesman Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*All are significant at 0.05 level.

Canonical correlation Coefficients
Uncertainty Model 0.43
Multiplicative Model 0.41

Partial success of this research lies in the study of specific or narrow risk categories instead of global ones. Seventeen specific risks were studied but only nine were found to be significant.

Thus it appears that the non-buying firm perceives more risk toward certain features of the vendor's offer than does the buying firm. For the products studied and for this one vendor, it is clear which features are associated with a difference in perception. As this is not a national probability sample, it is impossible to generalize to all products and all vendors. A safe generalization is that buying and non-buying firms will perceive different levels and types of risk.
toward the selling firm. The importance of this result to management is questionable because the differences found were so small.

Summary

Analysis and interpretation of data were presented in this chapter. Some of the hypotheses of the study were not supported by the data while others were found to be tentatively supported. In general, the predictor variables failed to explain enough of the observed variance to warrant proposing future research with the perceived risk concept.

The most salient contribution of this research was the empirical support for the notion that perceived risk varies with buy status and role position. Non-buying firms perceive more risk toward the out vendor than do the firms which buy from this vendor. Engineers and scientists perceive more risk than does the purchasing agent, but the basis for this elevated risk perception was not explained by the variables in this research. In addition it was found that the salesman is viewed with more risk than is the company or product.
CHAPTER VI

Summary and Conclusions

The focus of this chapter is on three topics. First, is a synopsis of the entire study. Second are the major conclusions to be drawn from this research. Finally, suggestions for future research are discussed.

Synopsis of the Study

This study was initiated to further the understanding of why one industrial vendor is preferred by some firms and not by others. Underlying this research was the generalized or overall hypothesis that the risks perceived by the buying firm toward the vendor are influential in its vendor selection decisions. In addition to researching the effect of perceived risk on vendor selection decisions, another fundamental purpose was to ascertain the influence of product category, organizational role position, personality, and experience related variables on the perception of risks.

An instrument was developed to measure twenty-one specific risk contents or risk variables. For each variable, a scaled response was obtained for the importance and uncertainty attached to that variable. The importance and uncertainty measures were combined, linearly and multiplicatively, to generate two additional scale responses. These
four scaled responses for each variable were individually examined for their association with buyer behavior.

In an attempt to understand the determinants of perceived risk, the instrument also obtained certain personal and work-related information. Each of these variables was examined for their correlation with the type and level of risk perceived.

Data were collected by sending mail questionnaires to U. S. firms which are customers or prospective customers of a large United States firm which is a substantial international competitor in the chemical intermediate field. Three products which varied in risk from low to high were studied. Respondents included purchasing agents, scientists, and managers.

With data from 148 firms for three products, three role positions, and two buy statuses, several hypotheses were examined using stepwise multiple correlation, stepwise multiple discriminant analysis, and difference-between-means tests. Significant findings were established using the F and standardized Z variables.

A primary hypothesis was that people not buying from a particular vendor would perceive more risk toward that firm than would people who were currently purchasing. Several narrow categories of perceived risk were examined with the supposition that not all would be significant. Specifically, it was hypothesized that the type and level of risk perceived would vary with the role position and the product category.
Finally, it was hypothesized that personal characteristics should affect the perception of risk. Specific and generalized self-confidence were expected to be inversely related to the perception of risk as was work experience.

Conclusions

Buy Status

At the outset of this study several objectives and theoretical problems were outlined. Primary among these objectives was the desire to determine whether the perceived risk concept might explain why one buying firm selects a particular vendor while a second buying firm does not. The evidence is clear: non-buying firms do indeed perceive more risk toward a vendor than do firms who decide to purchase from that vendor.

Narrow Risk Categories

Many perceived risk variables were researched with the variables being selected from literature on industrial buying decisions. Only a few were found to be significant which implies that global or single measures of perceived risk are inadequate. Knowing the specific variables which were significant provides management with the focus to direct their corrective communicative action for reducing the risk perceived by prospects. However, this contribution to perceived risk research is not the final or ultimate solution. Jointly, the significant variables explained only a small portion of the total variation.
existing between the buying and non-buying firms. Consequently, a need exists for fresh thinking to generate new variables having high potential predictive power.

**Role Position**

A third major conclusion is that role position has an impact on the perception of risks. In general, the scientist and manager in this study had very similar perceptions, but these were quite different from those expressed by the purchasing agent. Probably, it is not surprising to learn that the purchasing agent perceived less risk toward the product than did his fellow members of the buying center, the scientist and manager. However, it may be surprising to many that the scientists and managers perceived more risk toward cost than did the purchasing representative. Scientists and managers are as interested in cost as are purchasing agents. However, their uncertainty is greater, suggesting a desire for more relevant information.

**Risk for Salesman**

The risk content variables were divided into three major categories--product, company, and salesman. Each major category contained four or more specific risk variables which were combined to give a composite measure for each major category. It was demonstrated that the highest perceived risk for these composites was associated with the salesman. Purchasing agents, scientists, and managers, individually and collectively, all felt this way. In a way, this is
another expression of the low credibility possessed by salesmen. Yet, it can be viewed more beneficially as a focus for management effort.

**Personal Characteristics**

Another objective was to further the understanding of the determinants of perceived risk by examining it as a function of several personal characteristics. As with most other perceived risk research in this area, the results obtained did not support the hypotheses. No evidence could be found that work experience, perceived influence and perceived responsibility in the purchase decision, or generalized self-confidence were related to perceived risk. Support was found for the thesis that specific self-confidence is predictive of risk perception, but the degree of support was not sufficiently substantial to conclude salience for it.

**Perceived Risk Models**

Contained in this research were two separate measures for each of the twenty-one risk content variables—importance and uncertainty. Some researchers argue that the perceived risk is really perceived uncertainty and the importance component is either contained in the uncertainty component or is not important. Other researchers argue that both aspects are important and therefore need to be combined in some manner to reflect both components. No a priori theory exists for the combinational format so two were used in this study—linear and multiplicative. Most researchers using the combinational format have adopted the multiplicative model.
The importance and uncertainty components appear to be measuring different mental predispositions. Means for these two were quite different, and frequently one measure would be significantly different for a specific hypothesis while the other would not. Of these two, without any doubt, the uncertainty model was the more discriminating in this study. This conclusion is based on the relative frequency for which each component produced significant perceived risk variables. Only on a very few occasions were the specific variables significant in the importance model. Similarly, the additive model was found to be completely inferior to the multiplicative model in discriminating power. Very few variables were found to be significant with the additive model.

The choice between the uncertainty and multiplicative models is more difficult using the discriminating power as a basis. Both models were approximately equal in this respect. Importantly, there is no critical need to select one over the other. Neither model explained enough of the observed variance to warrant further study.

Suggestions for Future Research

Effective marketing strategies require knowledge of the buying process, the buyer's behavior, and the various influences and motivations that affect this behavior. Effective strategies are generally impossible, for the buying process is very complex and the current state of knowledge is still in its infancy. With this great need, this study was undertaken in the anticipation of increasing the level of
knowledge. Now that the research is concluded, it is clear that perceived risk added little to the understanding of why one vendor is selected over another. A great research need remains.

Future research should build on the fact that the perceived risk concept has never been found to be a strong explanatory variable. Earlier in this thesis, the literature reviewed demonstrated that the success of this concept has never equalled its intuitive appeal. The findings of this study are not unique but are consistent with the majority of the published data. In view of the minimal success to date, it is recommended for future research that perceived risk be replaced by new avenues of thought.

Certainly future research should build on the finding that several members of the firm are active participants in the purchase process. Importantly the buying center is made of people outside as well as within the purchasing department. As the purchasing agent, scientist, and manager respondents were approximately equal in response rate, it appears that all three were active members of the buying center. Possibly more firm members were involved or instrumental in the purchase process. This, of course, was not examined in this investigation, but can be studied in future efforts. One thing seems unshakeable: the purchasing agent is not the only decision maker.

Industrial buying behavior is intuitively best conceptualized as decision making in which personal and firm goals are both important. As decision making, the study of risk handling by the buying center members remains appealing. However, the risk to be studied needs to
be one that can be objectively established and manipulated by the researcher. This would avoid the problems inherent in perceived risk research--i.e., what is perceived risk and can it be measured.

To completely understand the decision of a firm to purchase from Vendor A and not Vendor B requires an understanding of the decision process used by the purchasing firm. The decision to buy is not a single event, but is a process. Data must be collected before, during, and after the actual vendor selection to determine the risk reduction strategies used by the buying firm. Many strategies are available besides the strategy of buying or not buying. Additional ones would include decision postponement, vendor or brand loyalty, information search, etc. In this longitudinal study, the relevant unit of study would be the individual and collective strategies of the buying center.
APPENDIX

Product Selection Criteria

1. **Established.** The buying firm must have purchasing experience with the product.

2. **Complex or Technical.** The product is to be sufficiently complex so that the purchasing staff at least solicits the opinion of the technical staff and the management at the operations level.

3. **Important.** The buying firm must purchase enough units annually to consider the product important. Importance is probably best measured by the influence the scientific and operations management exert or try to exert on the selection decision.

4. **Number of Customers.** A large number of customers is desired for each product category where large is over 100.

5. **Customer Size.** The product should be sold primarily to industries where the firms are large enough to have a purchasing department, a technical staff, and an operations management staff.

6. **Risk Continuum.** Risk is impossible to define in a totally satisfactory way and a risk continuum is not really defensible. Circumventing these definitional difficulties, product number one should be low cost, low importance, and low complexity relative to the other two products selected. Product number three should be as high in cost, importance, and complexity as possible. Product number two should have intermediate values for these variables. Importantly, the first five constraints can probably never be satisfied with a truly high risk product. Ideally what is sought is:

<table>
<thead>
<tr>
<th>Product Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Level to Buying Firm</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>
Dear Sir:

May we solicit your assistance? We are conducting a national study on industrial purchasing. Several products are included in this study and your firm has been identified as a buyer or a potential buyer of one of them.

Your firm's participation involves the completion of questionnaires by yourself and two other people in your organization. An explanation of your crucial role is attached to this letter.

By studying several products which are nationally distributed and by examining three points of view in each firm, we hope to obtain considerable insight into the complexities of industrial purchasing. Note that confidential information is not requested and your firm only answers questions relating to a single product.

Good research takes time and the cooperation of many. May we have your assistance in making this research worthwhile?

Sincerely,

Dennis D. Garber
Research Director

Enclosures
PROCEDURE

You are the crucial element in this research. Probably more than anyone else in your company, you have the most knowledge of the overall purchasing process and the influence exerted by various people in your company in the selection of a vendor for the product named on the questionnaire. Because of this central and vital position, your cooperation is essential.

The three enclosed questionnaires are titled Purchasing Agent, Scientist, and Manager. Using the explanation which follows, select the questionnaire that best corresponds to your responsibility. Then select the proper person for the remaining two questionnaires and seek their cooperation.

Purchasing Agent Questionnaire—To be completed by the purchasing department representative who is most familiar with this product.

Manager Questionnaire—To be completed by the manager of the technical expert.

Scientist Questionnaire—To be completed by the technical person who exerts the most influence in the vendor selection decision for this product. This person need not have a college degree, but does need to possess technical expertise with the product. He may work in any department such as production, research, development, or quality control.

Finally, and this is very important, after one week, please call both of the people selected to confirm their mailing of the completed questionnaire.
**QUESTIONNAIRE FOR MANAGER**

**Part I**

Instructions: This questionnaire contains some variables that are frequently considered when selecting a source of supply. For each variable listed, please check the location on the scale that best describes the importance of that variable to you for vendors of vinyl copolymer solution coating resins.

Please do not omit any questions.

<table>
<thead>
<tr>
<th></th>
<th>Product price</th>
<th>Not Very Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ability to deliver on schedule</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Innovative nature of vendor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Salesman's honesty</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Product performance</td>
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<td>7</td>
<td>Vendor's dependability of promises</td>
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<td>Salesman's dependability</td>
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<td>Product quality</td>
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12. Salesman competency
   Not Very Important  |  Very Important
   1 2 3 4 5

13. Product quality consistency
   Not Very Important  |  Very Important
   1 2 3 4 5

14. Vendor's technical capability
   Not Very Important  |  Very Important
   1 2 3 4 5

15. Emergency assistance
   Not Very Important  |  Very Important
   1 2 3 4 5

16. Salesman's effectiveness (in presenting his product to solve your problem)
   Not Very Important  |  Very Important
   1 2 3 4 5

17. Overall rating of vendor
   Not Very Important  |  Very Important
   1 2 3 4 5

Part II

Instructions: In the questions that follow, please check the location on the scale that best describes you. Each question is concerned with vendors of vinyl copolymer solution coating resins. Please do not omit any questions.

1. How would you rate your experience along the lines of selecting a vendor for these resins?
   Not at all experienced  |  Very experienced
   1 2 3 4 5

2. To what extent are you familiar with the complexities of vendor selection decisions for these resins?
   Not at all familiar  |  Very familiar
   1 2 3 4 5

3. Is selecting the best vendor for these resins an appropriate task for taking full advantage of your abilities?
   Not at all appropriate  |  Very appropriate
   1 2 3 4 5

4. To what extent have you had the opportunity to become familiar with the offerings of several suppliers of these resins?
   Not at all  |  Very
   1 2 3 4 5
5. In your opinion, what is your superior's analysis of the current vendor choice for these resins?
   Disagree completely | Agree completely
   1 2 3 4 5

6. If later events show that the current source for these resins is not the best, how much of the responsibility will be yours?
   Not at all responsible | Completely responsible
   1 2 3 4 5

7. If later events show that the current source for these resins is not the best, how much of the responsibility will belong to the purchasing department?
   Not at all responsible | Completely responsible
   1 2 3 4 5

8. If later events show that the current source for these resins is not the best, how much of the responsibility will belong to the technical person or scientist assigned to this decision?
   Not at all responsible | Completely responsible
   1 2 3 4 5

9. How much influence did you exert on the vendor selection decision for these resins?
   Not at all influential | Very Influential
   1 2 3 4 5

10. How much influence did the purchasing department exert on the vendor selection decision for these resins?
    Not at all influential | Very influential
    1 2 3 4 5

11. How much influence did the technical expert assigned to this decision exert on the vendor selection for these resins?
    Not at all influential | Very influential
    1 2 3 4 5

Part III

Instructions: This questionnaire contains some variables that are frequently considered when selecting a source of supply. For each variable listed, please check the location on the scale that best describes your certainty that the current vendor is at least equal to another vendor of vinyl copolymer solution coating resins.

If you purchase these resins from more than one vendor, compare the primary source with a vendor from whom you purchase none. If this is not possible, compare the primary source with the one from whom you purchase the least.

Please do not omit any questions.
1. Total cost
   - Not Very Certain
   - Very Certain

2. Ability to deliver on schedule
   - Not Very Certain
   - Very Certain

3. Innovative nature of vendor
   - Not Very Certain
   - Very Certain

4. Salesman's honesty
   - Not Very Certain
   - Very Certain

5. Product performance
   - Not Very Certain
   - Very Certain

6. Service
   - Not Very Certain
   - Very Certain

7. Vendor's dependability of promises
   - Not Very Certain
   - Very Certain

8. Salesman's dependability of promises
   - Not Very Certain
   - Very Certain

9. Product quality
   - Not Very Certain
   - Very Certain

10. Capability of supplying future demand
    - Not Very Certain
    - Very Certain

11. Reciprocity
    - Not Very Certain
    - Very Certain

12. Salesman competency
    - Not Very Certain
    - Very Certain

13. Product quality consistency
    - Not Very Certain
    - Very Certain

14. Vendor's technical capability
    - Not Very Certain
    - Very Certain
15. Emergency assistance

16. Salesman's effectiveness (in presenting his product to solve your problem)

17. Overall rating of vendor

Part IV

Instructions: Please circle the category that best describes you if categories are provided. If no category is provided, please fill in the blank. Please do not omit any questions.

1. Industrial work experience: _____ years.

2. Experience in current product area or department (whichever is more relevant) _____ years.

3. Do you currently purchase these resins from more than one vendor?
   
   Yes No Do not know

4. How long have you purchased these resins continuously from the present vendor(s)? If you don't know, put an X in the space provided.
   a. If only one source: _____ years
   b. If more than one source: _____ years
      _____ years
      _____ years
   c. Do not know _____

5. If you were to become dissatisfied with the present vendor of these resins, you might consult some or all the information sources listed below. The order in which you would consult each source is important. Please assign the number one to the source you would go to first, number two to the source you would go to second, and continue until all sources have been assigned a number between 1 and 8 inclusive. The number 8 is to be assigned to the last source you would approach. Please assign all the numbers from 1 through 8.

   Peers _____
   Superiors _____
   Experimentation _____
   Trade journals _____
   Present vendor _____
   Competitive vendors _____
   Industry sources _____
   Other (please specify by name) _____

6. Do you have a formal vendor performance analysis program in effect for vendors of these resins?
   
   Yes No Do not know

   If not, do you plan to put one into effect during the next year?
   
   Yes No Do not know
Part V

Instructions: In the questions that follow, please circle the phrase that best describes you. Please do not omit any questions.

1. How often do you feel inferior to most of the people you know?
   - Very
   - Fairly
   - Sometimes
   - Once in a great while
   - Not at all

2. In general, how confident do you feel about your abilities?
   - Very
   - Fairly
   - Slightly
   - Not Very
   - Not at all

3. How often do you have the feeling that there is nothing you can do well?
   - Very
   - Fairly
   - Sometimes
   - Once in a great while
   - Not at all

4. How much do you worry about how well you get along with other people?
   - Very
   - Fairly
   - Slightly
   - Not Very
   - Not at all

5. How often do you worry about criticisms that might be made of your work by whoever is responsible for checking up on your work?
   - Very
   - Fairly
   - Sometimes
   - Once in a great while
   - Not at all

6. How much do you worry about whether other people will regard you as a success or a failure in your job or career?
   - Very
   - Fairly
   - Slightly
   - Not Very
   - Not at all

7. When you have made an embarrassing mistake or have done something that makes you look foolish, how long do you usually keep on worrying about it?
   - Very
   - Fairly
   - Slightly
   - Not Very
   - Not at all

8. When you are trying to convince other people who disagree with your ideas, how worried do you usually feel about the impression you are making?
   - Very
   - Fairly
   - Slightly
   - Not Very
   - Not at all

9. How often do you feel to blame for your mistakes?
   - Very
   - Fairly
   - Sometimes
   - Once in a great while
   - Not at all
Dear Sir:

Recently you received a letter from me soliciting your participation in a study in progress at The Ohio State University. If you and the other representatives of your firm have not completed the questionnaires which accompanied that letter, may I encourage you to do so at your earliest convenience. If you have returned the three completed questionnaires, please disregard this letter and let me express my personal appreciation.

This research project is based on the recognition that the increased complexity of business in recent years has tremendously increased the difficulty of most purchasing decisions. Rarely are purchasing decisions so simple that only one variable is crucial or only one person makes the decision. Thus, this research focuses on several important purchasing variables including the interaction of the purchasing department with other firm members who participate in the purchase decision. How these people, product, economic, and company factors affect purchasing decisions is of significant value to all of us in the purchasing profession.

Sincerely yours,

Dennis D. Garber
Research Director

DDG/pkn
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