ABSTRACT

AN INVESTIGATION OF PURCHASING CRITERIA IMPORTANCE ACROSS ORGANIZATIONAL BUYING INFLUENCES

By

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This dissertation empirically investigated the hypothesis that organizational buying influences significantly differ in the importance they place upon brand purchasing criteria.

Recent models of organizational buyer behavior all recognize that organizational purchases are often influenced by more than one organizational member. Further, these buying influences may have different organizational responsibility, face different product related problems, and stress different criteria when evaluating alternative product brands.

The overall objective of this study was to empirically test for significant differences in purchasing criteria importance across organizational buying influences. Five specific research objectives were pursued in this study: 1) identify two relatively homogeneous categories of buying influences for an industrial product(s), 2) determine the purchasing criteria salient to these buying influences, 3) predict specific differences in criteria importance on the basis of different product related problems facing each buying influence category, 4) quantitatively measure criteria importance for each buying influence category, and 5) analyze criteria importance measures for significance.

The research setting used for this study was the purchasing of two industrial component parts, limit switches and magnetic starters, by manufacturers of conveying equipment. The study was conducted in two distinct research phases: exploratory research phase and conclusive research phase.

The exploratory research phase used personal interviewing supplemented with telephone interviewing to identify two buying influence categories for limit switches and magnetic starters in the conveyor industry, identify the product related problems and brand evaluation criteria used by these buying influences, and to hypothesize criteria importance differences based upon different product related problems faced by each buying influence category.

The first buying influence category identified in this study was design engineering personnel located in the original conveyor equipment manufacturing organizations and are referred to as OEM buying influences. The second buying influence category identified in this study were maintenance personnel located in the organizations purchasing and using the conveying equipment and are referred to a USER buying influences.

Exploratory research identified seventeen limit switch and fourteen magnetic starter brand purchasing criteria. Based upon different product related problems faced by each buying influence category, it was hypothesized that USER buying influences would place greater importance upon three limit switch purchasing criteria and one magnetic starter purchasing criterion. Similarly, it was hypothesized that OEM buying influences would place greater importance upon three limit switch purchasing criteria and four magnetic starter purchasing criteria.

The conclusive research phase utilized a telephone screening

procedure to identify primary OEM buying influences in 132 conveyor manufacturing organizations and primary USER buying influences in 168 conveyor-using organizations. A mail questionnaire was sent to each OEM and USER buying influence in order to quantitatively measure the relative importance of each criterion. Ninety OEM questionnaires were returned or a return rate of 68 percent. One-hundred nine USER questionnaires were returned or a return rate of 65 percent.

Data analysis revealed that overall criteria importance ratings were similar across OEM and USER buying influences but that significant criteria importance differences were found on a few individual criteria. Statistical analysis of OEM and USER mean criteria importance rank orders revealed significant similarity in internal rank order across buying influence categories. Rank order differences did exist, however, and were more strongly associated with the criteria hypothesized to have different importance ratings.

Analysis of specific criteria mean importance ratings revealed that seven of seventeen limit switch criteria and four of fourteen magnetic starter criteria significantly differed (.01). Further, these significant differences were largely predicted a priori on the basis of different product related problems facing OEM and USER buying influences.

These results support current models of organizational buyer behavior which hypothesize purchasing criteria differences across organizational buying influences.

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

PROBLEM DEFINITION AND RESEARCH OBJECTIVES

Introduction

This research investigated organizational purchasing in order to determine if purchasing criteria importance significantly differed across organizational buying influences. Chapter I describes the research problem that is investigated, the specific research objectives, the research setting used for this investigation, and the anticipated significance of research findings.

The literature relevant to this research is reviewed in Chapter II. The methodology used for data collection is described in Chapter III. The empirical results are presented and analyzed in Chapter IV. The theoretical and practical significance of research findings are discussed in Chapter V.

Research Problem

According to the marketing concept, a firm should design its products, promotion, pricing, and distribution decisions to satisfy the needs and wants of prospective customers. Implementation of this concept requires that the decision maker understand what is important to prospective customers when they evaluate alternative product brands.

When prospective customers are a formal organization such as a business firm, government agency or a non-profit institution, the

marketer needs to understand the way in which organizational purchasing decisions are made. Specialization and departmentalization within these organizations result in products being requisitioned, purchased, and used by more than one organizational member. For example, a study of the purchasing of corrosion control systems by industrial plants concluded that some combination of the following eight organizational members might exert direct or indirect influence on a plant's purchasing decision: 1) general manager, 2) director of manufacturing, 3) plant manager, 4) maintenance or corrosion engineer, 5) purchasing agent, 6) research department personnel, 7) plant engineer, and 8) plant foreman (Turner, 1953). Therefore, the marketing decision maker should ideally understand what organizational members influence purchasing for a particular product or service and what criteria are important when they evaluate alternative suppliers and brands. The limited empirical evidence to date, however, suggests that industrial marketing decision making could be significantly improved. For example, a study of sales call strategy revealed that sixty-four percent of sales calls were made to the wrong organizational member (Sales Management Magazine, 1959). A second investigation of advertisers and prospects in four industrial markets concluded that industrial advertisers did not correctly perceive prospect needs and suggested that advertisers reexamine their information-gathering process (McAleer, 1974).

Current models of organizational buyer behavior hypothesize that the criteria used to evaluate purchasing alternatives differ significantly across organizational buying influences (Robinson, Faris, and Wind, 1967; Sheth, 1973; Webster and Wind, 1972b). These models suggest that each organizational buying influence views purchasing from

the perspective of their own unique organizational problems. For example, the selection of a component part supplier by an original equipment manufacturer may require the approval of, or be influenced by, several affected departments such as purchasing, design engineering, and marketing. In this example, current organizational buying models suggest that members of the purchasing department will seek favorable prices (Robinson, et al., 1967; Sheth, 1973; Webster and Wind, 1972b), engineers will place importance upon product standardization and product pretesting (Sheth, 1973), and that marketing personnel will stress the importance of component part acceptance by ultimate equipment users (Robinson et al., 1967; Webster and Wind, 1972b). Such organizational buying has been described as a complex process involving numerous organizational members with differing goals and potentially conflicting decision criteria (Webster and Wind, 1972a).

To date, few studies have focused upon multiple organizational buying influence. Webster (1969) concludes that the existence of multiple organizational buying influences is a major obstacle to organizational buying research and theory building. No published research to date has specifically investigated the differences in purchasing criteria across organizational buying influences that have been hypothesized by recent models of organizational buyer behavior, specifically, Robinson et al. (1967), Sheth (1973), and Webster and Wind (1972b).

These hypotheses have practical significance for marketing decisions. Empirical support of different purchasing criteria across organizational buying influences suggest a basis for segmenting organizational markets and tayloring marketing decisions to better fit the

needs of each buying influence category. For example, Frank, Massy, and Wind (1971) suggest the following two stage approach for segmenting organizational markets: 1) organizational markets should be first segmented and grouped on the basis of homogeneous organizational characteristics, such as product end-use patterns using Standard Industrial Classification (S.I.C.) categories and 2) each segment should be further divided on the basis of homogeneous buying influence characterstics such as common objectives, goals, and problems that are shared by each buying influence category. Implementation of this segmentation approach would in turn require that a firm's market information gathering system specifically focus upon purchasing criteria similarity and differences across organizational buying influences.

Research Objectives

The overall objective of this research is to test the hypothesis that purchasing criteria significantly differ across organizational buying influences. The following specific research objectives will be pursued:

1. Identify two relatively homogeneous groups of organizational buying influences for an existing industrial product.

2. Determine the purchasing criteria salient to these buying influences.

3. Predict differences in crteria importance on the basis of different product-related problems that are faced by each group.

4. Quantitatively measure the importance of purchasing criteria to each buying influence group.

5. Analyze criteria importance measures for significant differences.

The specific research hypotheses tested in this research are described in Chapter III, Research Methodology.

Anticipated Significance of Research Findings

It is hoped that this reserch will contribute to marketing theory, practice, and education. The findings of this research should have significant theoretical implications regarding the validity of hypothesized differences in purchasing criteria importance across organizational buying influences. Empirical verification of these hypothesized differences should provide needed support for current models of organizational buyer behavior. A lack of support justifies a critical reanalysis of these models and their underlying assumptions.

These research findings should also be significant to the marketing practitioner selling to organizational markets. Empirical verification of differences in purchasing criteria importance across two categories of organizational buying influences supports the feasibility of segmenting the organizational market on the basis of buying influences. This may increase the marketer's awareness of the opportunity to taylor marketing effort, particularly advertising and personal selling effort, to better meet the needs of the organizational markets. Finally, it is hoped that marketing education and subsequent marketing practice can be improved by testing organizational buying theory in a real world purchasing situation.

Research Setting

Products Selected

Limit switches and magnetic starters were the two products selected for this research. These products are electrical component parts purchased by equipment manufacturers to perform electrical motor control functions. A description of these products and the rationale for their choice for this research is found in the methodology section, Chapter III.

Markets Selected

The conveyor equipment manufacturers market (S.I.C. 3535) was selected as the market to study buying influences for limit switches and magnetic starters. A description of the conveyor manufacturers' market and the rationale for its use in this research is found in the methodology section, Chapter III.

Buying Influences Identified

Two relatively homogeneous categories of buying influences for the brand of limit switch and magnetic starters used on new conveyor equipment were identified in the exploratory research phase. The first buying influence category resided within the organization which manufactured conveying equipment and the second category resided within the organization that used the conveying equipment.

Engineering personnel identified through exploratory interviews were found to be the primary buying influence within conveyor manufacturing organizations for both limit switches and magnetic starters. This buying influence category is referred to as "OEM" (i.e., original equipment manufacturer) throughout this study. These engineers

designed the conveyor's electrical circuitry, selected appropriate electrical component parts, and specified the brand and model numbers to be purchased. Purchasing personnel were not considered primary buying influences for these two products since brand names and model numbers were specified by engineering.

Exploratory interviewing with conveyor OEM's also indicated that the larger organizations who purchase and use conveying equipment often specified to the OEM the limit switch and magnetic brands to be purchased and installed on their conveying equipment. Exploratory interviewing with large conveyor users indicated that electrical maintenance personnel were the primary buying influences within the conveyor user organization. This buying influence category is referred to as "USER" throughout this study. Purchasing personnel within the conveyor equipment using organization were involved in writing and communicating equipment specifications to conveyor manufacturers, but were not considered as primary buying influences since the brand preference normally originated from maintenance personnel.

A description of these buying influences and how they were identified in the organizations contacted is found in the methodology section, Chapter III.

Data Collection

This research was conducted in two phases, exploratory and conclusive. The exploratory research phase was used to identify the two major categories of buying influences (i.e., buyers and users) and for determining the criteria used by each category to evaluate brands of limit switches and magnetic starters.

The conclusive research phase entailed measuring purchasing criteria importance for OEM's and USER's. The specific buying influences within each organization surveyed were identified by a preliminary telephone interview. Final data collection was accomplished through a mail questionnaire.

A detailed description of the data collection procedures used in this study are described in the methodology section, Chapter III.

CHAPTER II

REVIEW OF LITERATURE

Introduction

This chapter reviews literature pertaining to hypothesized differences in purchasing criteria across organizational buying influences. The review is organized into the following three sections: a review of 1) relevant aspects of three current models of organizational buyer behavior, 2) empirical studies relating purchasing criteria differences across organizational buying influences, and 3) alternative approaches useful for empirically measuring differences in criteria importance.

Models of Organizational Buyer Behavior

Three models of organizational or industrial buyer behavior have been presented in the literature (Robinson, Faris, and Wind, 1967; Sheth, 1973; Webster and Wind, 1972). The following review of each model focuses upon three areas relevant to the present research topic: 1) the specific conceptualization of organizational buying influences, 2) the specific nature of hypothesized purchasing criteria differences across organizational buying influences, and 3) the theoretical reasoning underlying these hypothesized differences.

Robinson, Faris and Wind's Model

Robinson, Faris and Wind's (1967) model of industrial buying is based upon an in-depth study of purchasing within large manufacturing organizations. Their model appears to have significant implications, however, for non-manufacturing organizations.

Conceptualization of Industrial Buying Influences

Robinson, Faris and Wind (1967) broadly conceptualize a buying influence as anyone who directly or indirectly becomes involved in one or more of the stages of the following industrial purchasing process: 1) anticipation or recognition of a problem that has at least one possible purchasing solution, 2) determination of general characteristics of desired problem solution, 3) description of specific solution characteristics and quantity needed for problem solution, 4) search for, and qualification of, potential sources of supply, 5) acquisition and analysis of proposals, 6) evaluation of proposals and selection of supplier(s), 7) selection of specific order routine, and 8) performance feedback and evaluation. Their conceptualization of organizational buying influences, therefore, is not limited to influencing only supplier selection (i.e., stage 6) but may occur at any stage throughout the entire purchasing process.

Robinson, Faris, and Wind (1967) further suggest that buying influences may be found across diverse functional areas and at different hierarchial levels in the organization. For manufacturers, they suggest using a functional classification of buying influences: 1) purchasing, 2) marketing, 3) design engineering, 4) manufacturing, 5) research and development, 6) general management, and 7) supporting

staff such as finance. They conclude that the specific functional areas most likely to influence the purchasing process are dependent upon the specific industry, the product being purchased, and the specific purchasing problems encountered within each organization.

Interorganizational buying influences (i.e., buying influences located in more than one organization) are implicitly recognized by Robinson, Faris and Wind (1967) since the purchasing process of the manufacturing organizations studied were often influenced by the organization's customers. Interorganizational customer influence took the form of reciprocity, customer brand specifications, and consideration of the impact of purchasing decisions upon product salability. Their primary focus, however, is upon buying influences residing within the manufacturing organization.

Hypothesized Criteria Differences Across Buying Influences

Robinson, Faris and Wind (1967) hypothesize that diverse buying influences look at different criteria when evaluating purchasing alternatives. The precise nature of these hypothesized differences is not elaborated except through examples. They hypothesize, for example, that marketing buying influences evaluate purchasing alternatives in terms of their ability to increase product salability, that manufacturing buying influences evaluate purchasing alternatives in terms of possible production problems and production cost, and that financial buying influences may evaluate these alternatives in terms of their short and long range financial implications. These examples suggest that diverse corporate buying influences have unique criteria for evaluating purchasing alternatives.

Reasoning Underlying Hypothesized Criteria Differences

Robinson, Faris, and Wind (1967) suggest that organizational buying influences have different corporate roles with unique performance responsibilities. In performing these roles, each buying influence is motivated by self interest and develops a unique perspective, outlook, or frame of reference that is used to evaluate alternative decisions, including purchasing decisions. Therefore, each buying influence sees purchasing problems and alternative solutions from his own unique organizational perspective.

Webster and Wind's Model

Webster and Wind (1972) present a model of organizational buyer behavior which goes beyond industrial manufacturing organizations to include all profit and non-profit organizations. This model attempts to organize all factors which influence purchasing into four categories: 1) environmental influences, 2) organizational influences, 3) interpersonal influences, and 4) individual influences.

Conceptualization of Organizational Buying Influences

Webseter and Wind (1972) conceptualize organizational buying influences as a buying group or buying center consisting of five buying roles: 1) user of product or service, 2) decider who determines final supplier selection, 3) buyers who negotiate with suppliers and procure the product or service, 4) influencers who indirectly influence buying decisions, and 5) gatekeepers, such as secretaries, who control the flow of information into the buying center. Each buying role may be played by more than one organizational member and one organizational

member may play two or more buying roles simultaneously.

Webster and Wind (1972) normally refer to buying influences as residing within the purchasing organization. However, they define the buying center as consisting of all individuals who participate in the purchasing process. Interorganizational buying influences are recognized in their model and include suppliers, government, labor unions, trade and professional associations, and customers of the purchasing organization. Webster and Wind (1972) suggest that the criteria used to evaluate a praticular buying alternative may come directly or indirectly from the customers of the purchasing organizations.

Hypothesized Criteria Differences Across Buying Influences

Webster and Wind (1972) hypothesize that organizational buying influences use different criteria to evaluate alternative buying actions, such as alternative suppliers or brands. The specific nature of these hypothesized differences is elaborated only through the use of examples of criteria important to various organizational positions. A financial officer, for example, may be primarily concerned with the impact of the purchase upon the organization's cash position and the maintenance foreman may be primarily interested in the frequency of product repairs. They suggest that these differences in purchasing criteria may be the source of conflict within the purchasing organization.

Reasoning Underlying Hypothesized Criteria Differences

Webster and Wind (1972) suggest that different purchasing criteria across organizational buying influences result from a combination

of specialization within the organization and the organizational member being motivated by self interest. They suggest that organizational buying influences may have different functions and performance objectives within the organization which results in a unique frame of reference or point of view.

The individual is seen as being motivated by self interest to seek some combination of personal goals or desired rewards, such as security, financial gain, increased self-esteem, minimization of effort, or informal social rewards. Over time the individual adopts those specific organizational goals and performance objectives that are perceived as providing desired rewards and avoiding negative rewards such as formal or informal punishment. In a specific purchasing context, the organizational member learns what purchasing criteria are important to reward attainment.

Therefore, they conclude that it is the individual's learned frame of reference that determines the criteria used when evaluating alternative buying actions. "Each member of the organization will evaluate alternative buying actions according to the extent to which they will contribute to his performance in the organization and enhance it in some way, such as by making it more effective or easier (Webster and Wind, 1972, p. 81).

In order to determine the criteria important to an individual buying influence, they specifically suggest asking, through a survey or sales call, about the product related problems that the individual has to solve. It is expected that the criteria relevant to solving an individual's product related problems will be the criteria important to that individual (Webster and Wind, 1972, p. 114).

Sheth's Model

Sheth (1973) presents a brief model which focuses primarily upon purchasing by industrial manufacturing organizations. He suggests, however, that the model is applicable to non-manufacturing organizations.

Conceptualization of Organizational Buying Influences

Sheth (1973) does not rigorously conceptualize organizational buying influences but rather suggests that there are typically three departments which normally influence an industrial purchase: 1) purchasing, 2) engineering or quality congrol, and 3) manufacturing, referred to as "user." By deduction, it is assumed that Sheth is referring to those product purchases to be used directly in the production process, such as component parts, raw materials, or perhaps production equipment.

Sheth (1973) makes no direct references to the possible existence of interorganizational buying influences.

Hypothesized Criteria Differences Across Buying Influences

Sheth hypothesizes that different purchasing criteria are salient to each buying influence. He suggests that product users look for prompt delivery, proper installation, and efficient serviceability; purchasing agents look for price advantage and shipping economy; and that engineering looks for excellence in quality, product standardization, and engineering pretesting.

Sheth (1973) suggests that differences in criteria saliency result in different brand expectations across buying influences. Brand

expectations are defined as the perceived potential of brands to satisfy salient criteria. While Sheth's model primarily emphasizes the hypothesized differences in brand expectations across organizational buying influences, it is important to note that hypothesized differences in brand expectations are based upon an underlying difference in criteria importance across buying influences (Sheth, 1973, p. 52). Therefore, the three models reviewed all hypothesized differences in criteria importance and only the Sheth model hypothesizes differences in brand expectations. This dissertation research focuses upon the more basic hypothesis concerning the underlying differences in criteria importance hypothesized to exist across organizational buying influences.

Reasoning Underlying Hypothesized Criteria Differences

Sheth suggests that criteria saliency differences across buying influences reflect underlying differences in individual goals or objectives. Differing goals or objectives are suggested to be caused by differences in organizational task responsibility and differing educational backgrounds of buying influences. "The organization typically rewards each individual for excellent performance in his specialized skills, so the purchasing agent is rewarded for economy, the engineer for quality control, and the production personnel for efficient scheduling" (Sheth, 1973, p. 53). Therefore, through purchasing experience, each buying influence learns what criteria are most important or salient in providing specialized organizational rewards.

Since Sheth places major emphasis upon different brand expectations across buying influences rather than differences in criteria importance per se, it is difficult to differentiate which factors

specifically underlie differences in criteria importance and which factors more specifically underlie differences in perceived brand potential (i.e., brand expectations). It would appear, however, that the factors perceptual distortion and information search and exposure would more logically underlie perceived differences in brand performance potential.

Other Sources Hypothesizing Criteria Differences

In addition to the above mentioned models of organizational buyer behavior, there are several additional general sources that also hypothesize criteria differences across organizational buying influences. These sources include general marketing texts (McCarthy, 1975), industrial marketing texts (Alexander, Cross, and Hill, 1967), and personal selling texts (Thompson, 1973). These sources generally view organizational buying as a form of problem solving where each buying influence faces different problems and, therefore, emphasizes the purchasing criteria perceived as directly related to solving these problems. These sources provide additional support for the general hypothesis that the importance of purchasing criteria differ across organizational buying influences.

Summary of Models

Each model reviewed hypothesized differences in purchasing criteria across organizational buying influences but differed somewhat in their conceptualization of these buying influences, the precise nature of hypothesized differences, and the reasoning used to support these hypothesized differences.

Two general conceptualization systems for understanding organizational buying influences were advanced: 1) the individual's role within the buying center or buying group, including user, decider, buyer, influencer, and gatekeeper (Webster and Wind, 1972), and 2) the individual's role within the overall organization, such as purchasing agent, maintenance foreman, etc. (Robinson, Faris, and Wind, 1967; Sheth, 1973). While the former system elucidates the diverse forms of buying influences, the latter system using organizational positions or roles appears more useful for understanding the specific criteria likely to be important to a particular buying influence. All three models used organizational position as the basis for suggesting specific criteria differences across buying influences.

The precise nature of hypothesized differences, such as differences in criteria importance rank order, were not precisely hypothesized in any model. Sheth suggests that different criteria will be salient across buying influences and also that these criteria will "substantially differ" across buying influences (Sheth, 1973, p. 52). Webster and Wind (1972) simply suggest that organizational buying influences use "different criteria for evaluating alternative buying actions" (Webster and Wind, 1972, p. 81). Robinson, Faris, and Wind emphasize that buying influences have different perspectives or outlooks when evaluating alternative buying actions (Robinson, Faris, and Wind, 1967, pp. 122-123). For purposes of this research, these differences will be operationally investigated in terms of differences in the relative criteria importance across buying influences. Haley (1968) has concluded that consumer market segments, for example, seek similar products benefits but differ in the relative importance placed upon

individual benefits or criteria. Alternative approaches for operationally measuring the relative importance of purchasing criteria will be reviewed in the last section of this chapter.

While each model differed somewhat in terms of the specific reasoning underlying hypothesized criteria differences across organizational buying influences, substantial similarities are evident. Each model referred to differences in specialized job performance objectives and product related problems as a primary reason underlying these hypothesized differences. These differences in objectives and problems are similarly cited in texts of industrial marketing (Alexander, Cross, and Hill, 1967), general marketing (McCarthy, 1975), and personal selling (Thompson, 1972).

Empirical Studies of Criteria Differences

This section reviews empirical studies that relate to criteria differences across organizational buuing influences. No study reviewed focused directly upon differences in purchasing criteria across organizational buying influences. Several studies, however, provide indirect support for these hypothesized differences.

Levitt's (1967) experiment regarding the persuasive effect of company reputation and quality of sales presentation indicated that a sales presentation from a known company was significantly more effective for engineers than for purchasing agents. Although criteria importance was not measured per se, it might be indirectly inferred that company reputation is more important to engineering or technical buying influences than to purchasing agents.

Scientific American (1969) studied six functional areas regarding who was most likely to be involved in either initiating a new purchasging project, determining product specifications, and/or selecting a praticular supplier. For example, purchasing personnel were reported as being the functional area most likely to be involved if the reason for project initiation was a new price differential between suppliers. It might be indirectly inferred that price appeal is more important to purchasing than to other functional areas.

Three studies have documented the existence of multiple buying influences (Harding, 1966; Klass, 1961; Turner, 1953) and two studies have focused specifically upon the relative influence of purchasing agents versus other organizational buying influences (Strauss, 1962, 1964; Weigand, 1966). These investigations of multiple buying influences have not directly focused upon criteria differences across these buying influences.

Empirical support for the effect of product related problems upon purchasing criteria importance comes from Cardozo and Cagley (1971) and Lehmann and O'Shaughnessy (1974). Cardozo and Cagley (1971) administered a buying game to purchasing agents where the purchasing situation was manipulated in order to study the effect of selected experimental variables. Most relevant to the hypotheses investigated in this dissertation were the effects of the experimentally controlled variables "risk of late delivery." Results indicated that purchasing agents tended to solicit bids from companies stressing prompt delivery when the major purchasing risk was possible late delivery. While the importance of delivery was not measured directly, it appears to be more important when risk of poor delivery is present.

The logical implication for the present research effort would be that if risk type varies across buying influences, it may also be expected that the importance of the risk-related criteria (e.g., fast delivery) would also differ.

Lehmann and O'Shaughnessy (1974) investigated the effect of various purchasing problems upon the relative importance of seventeen purchasing criteria to purchasing agents in forty-five companies. Purchasing agents rated the relative importance of each criterion for four products associated with different problems, such as performance problems or product user training problems. The authors hypothesized that the criteria most relevant to each problem type would be rated relatively more important. Study results tended to support these hypotheses and the authors concluded that criteria importance measures may be useful, therefore, in segmenting the industrial market. While this study involved only purchasing agents, it appears logical that different purchasing problems faced by diverse organizational buying influences would also result in differing criteria importance across these buying influences. This study, therefore, provides very strong support for the logic employed in current models of organizational buyer behavior to hypothesize that criteria differences across organizational buying influences reflect an underlying difference in product related problems faced by these buying influences.

Alternative Measures of Criteria Importance

Two alternative approaches for conceptualizing and measuring criteria importance have been advanced in the marketing literature. Each approach is briefly reviewed in this section in order to select

the measure to be used in this research study.

Alpert (1971) and others (e.g., Scott and Bennett, 1971) have distinguished between important purchasing criteria and determinant purchasing criteria. The degree to which a criterion determines brand choice refers to the degree to which the criterion was actually used to make a brand selection. If all brands were perceived as equal on a particular criterion, it would not be a criterion which determined specific brand choice. The degree of determinance for a particular criterion depends, therefore, upon differences in perceived brand performance. The degree of criterion determinance is normally derived indirectly by calculating the strength of the association between a brand's performance rating on each criterion with a measure of overall brand appeal. Correlation or regression analysis have been used to calculate the strength of this association (e.g., Alpert, 1971; Scott and Bennett, 1971). Determinant criteria are, therefore, brand specific, and would not be assumed to be constant across all brands.

In contrast, criteria importance may be measured directly by having each buyer rate the importance of each criterion for a parcitular product (Alpert, 1971; Lehmann and O'Shaughnessy, 1974; Scott and Bennett, 1971). Alpert (1971) suggests that a criterion such as automobile safety may be rated as being very important but may not be determinant if buyers perceive all automobile brands as being equally safe.

Scott and Bennett (1971) investigated criteria importance and determinant criteria for electrical engineers and concluded that crition importance was needed for segmenting the overall market into homogeneous groups and suggested that determinant criteria would be more

appropriately calculated for each segment separately. It would appear, therefore, that criterion importance measured directly is more useful for segmenting markets and that calculating criterion determinance is more appropriate for understanding the specific appeal of each brand within segments.

This study will employ a direct measure of criterion importance for several reasons. First, the differences in criterion importance hypothesized by current models of organizational buyer behavior are theoretically predicted on the basis of different product related problems faced by each buying influence. These criterion importance differences are not necessarily contingent upon perceived differences in supplier performance. Therefore, it is concluded that a direct measure of criterion importance represents the more accurate test of hypothesized criterion differences across organizational buying influences.

Second, empirical evidence supporting hypothesized differences in criterion importance across organizational buying influences would have practical implications for personal selling and market segmentation even if all existing brands are actually perceived as being equal on these criteria. These criterion importance differences could provide a future basis for creative brand differentiation of existing or new brands.

CHAPTER III

METHODOLOGY

The objective of this research was to directly measure the importance of brand purchasing criteria in a realistic organizational buying setting and to test for significant differences in criterion importance across two groups of buying influences. The setting selected for this research was the purchasing of two electrical component parts in the conveyor manufacturing industry.

Two distinct research phases were employed. The first phase, exploratory research, utilized in-depth personal and telephone interviewing. This phase had three objectives: 1) to identify two groups of organizational buying influences relevant to the products selected, 2) to determine the criteria used in making brand coice, and 3) to hypothesize specific differences in criterion importance on the basis of different problems facing each buying influence group.

The second research phase employed was quantitative data collection for hypothesis testing. A mail questionnaire was used to measure the importance of brand purchasing criteria across the two groups of organizational buying influences that were identified in exploratory research. The procedures used in each research phase are subsequently described. Results and hypothesis testing are presented in the following chapter.

Exploratory Research Phase

Product and Market Selection

The following objectives guided the selection of the products and market used in this study. First, it was necessary that the research setting be a real buying situation for existing products. Second, more than one product should be included in order to increase the generalizability of the results. Third, the market should correspond to a standard industrial classification (i.e., S.I.C.) category in order to increase the homogeneity of companies and buying influences. The research setting selected was the purchasing of two industrial component parts, limit switches and magnetic starters, by conveyor manufacturers (S.I.C. 3535).

Market Description: Conveyor manufacturers (S.I.C. 3535) are establishments that are primarily engaged in the manufacturing of conveying equipment. Conveying equipment is a type of material handling equipment used in mines, factories, warehouses, and other commercial establishments. The function of the equipment is to move objects such as raw materials or finished products along a fixed path from one point to another. The objects often ride on a conveyor belt that may be driven by an electric motor.

Product Description: Size 1 magnetic starters are common electrical component parts used to start, accelerate, and stop the electric motors that are used to drive a conveyor. When starting up a conveyor, the conveyor operator may activate a "start" push button which, in turn, causes the magnetic starter to connect the power required to drive the electric conveyor motor. Magnetic starters may be located near the conveyor motor or alternatively in a remote electrical control panel.

Limit switches are electrical components that are attached to the conveyor and are designed to physically detect objects moving along the conveyor. When the limit switch arm physically detects object movement, electrical contacts within the switch are activated producing an electrical signal. This signal is used to perform various control functions such as opening a gate to allow objects to pass or counting the number of objects moving along the conveyor.

Identification of Major Buying Influences

A major objective of the exploratory research phase was to identify two relatively homogeneous buying influence groups which exerted influence in the selection of limit switches and magnetic starters used on new conveying equipment. A personal interviewing procedure was employed whereby individual contacts were made with a high ranking member of the purchasing department (e.g., the Purchasing Manager) and the engineering department (e.g., the Engineering Manager) in 21 conveyor manufacturers. Each member was asked to describe the brand selection process for limit switches and magnetic starters and to indicate which organizational members exerted the most influence over brand choice. A referral interviewing procedure was used whereby a buying influence mentioned during one interview would be subsequently contacted and interviewed. A similar telephone interviewing procedure was employed to contact ten additional conveyor manufacturers.

Interview results indicated that the major buying influences for electrical components were technical engineering personnel who were responsible for the electrical engineering function. Although there was some variation in title, these individuals were normally

electrical engineers. The engineers were responsible for designing the conveyor's electrical system and requisitioning the required electrical components. The requisitions received by purchasing invariably contained the brand name of limit switches and magnetic starters. Brand name specifications from engineering were not changed by purchasing personnel because the precise component dimensions, such as component length, width, height, bolting pattern, and wiring terminals, were included on the electrical wiring diagram. Since alternative component brands have different dimensions, a brand change requires a wiring diagram change. Brand changes occurred only when the first specified brand was unavailable for delivery when it was needed. In this case, the engineer's second preference would be requisitioned. Therefore, it was concluded that the most influential brand buying influences for limit switches and magnetic starters were technical design engineers rather than purchasing personnel.

The interviews indicated, however, that large conveyor customers who purchased and used conveying equipment often specified their limit switch and magnetic starter brand preference(s) to the conveyor manufacturer. Further questioning indicated that the following manufacturing industries purchased conveying equipment and that the larger organizations in these industries normally specified their brand preferences for limit switches and magnetic starters: beer, canned fruit and vegetables, cigarettes, coal mining, dairy, farm equipment, foundaries, iron and copper mining, liquor, paper, soft drinks, steel, sugar, and textiles.

Following referrals obtained from conveyor manufacturers, 10 large conveyor-using organizations were interviewed personally and 17 were interviewed by phone. At least one organization in each of the industries listed above was contacted in order to determine which organizational members exerted the most influence over brand specifications for the products studied.

In each organization, a top ranking member of the purchasing department and the manufacturing department were contacted and asked to describe how brand specifications were made and what organizational member was primarily responsible for its selection. A referral interviewing procedure was again employed whereby all buying influences mentioned during an interview were subsequently contacted and interviewed.

Results indicated that purchasing personnel generally wrote brand specifications but the brand choice was normally based upon the preference of technical personnel, usually maintenance personnel. It was concluded that two groups of relatively homogeneous brand buying influences for both limit switches and magnetic starters were located within the conveyor manufacturing organization (composed primarily of electrical engineers) and within the conveyor user organization (composed primarily of maintenance personnel). These buying influences will be subsequently referred to as OEM's and USER's.

Brand Purchasing Criteria: Identification and Hypothesized Differences

Each buying influence identified through the procedure described in the preceding section was interviewed and asked to discuss any problems encountered with limit switch or magnetic starters and to describe the criteria that were used for each product when making their

brand selection. During the interview, responses were recorded by tape recordings or by written notes. This interview procedure continued until the information was largely repetitive and no new problem areas or criteria were being identified. Interview tapes and notes were subsequently analyzed in order to classify the salient purchasing criteria. The final criteria list was stated as positive benefits sought from brands (Haley, 1968). That is, each criterion or benefit was intended to represent a desired solution to a potential brand problem. Seventeen limit switch brand purchasing criteria and fourteen magnetic starter brand purchasing criteria were judged to be salient to either OEM buying influences, USER buying influences, or to both buying influences. Each problem area and related purchasing criterion is described in this section.

Six of seventeen limit switch criteria and five of fourteen magnetic starter criteria were specifically hypothesized to be relatively more important (.01) to one particular buying influence group. These specific hypotheses were made on a judgment basis when personal interviews indicated that one problem area was encountered much more frequently by either OEM or USER buying influences.

A priori hypotheses were generated in this study for two reasons. First, the current models of organizational buyer behavior reviewed in Chapter II suggest that the purchasing criteria important to a particular buying influence reflect the product related problems faced by that buying influence. Analysis of these specific hypothesized differences will, therefore, provide a more specific test of model validity. Second, by predicting in advance the direction and significance of selected criteria importance differences, the possibility of

accepting differences due to chance is reduced.

Each product related problem, purchasing criterion, and specific hypothesis for each product is described below.

Limit Switches

Problem Area #1: Some brands of limit switches are perceived as being fragile and easily damaged. Conveyed objects such as coal may jam a conveyor line and cover the limit switch. A fragile switch would be damaged more readily than a rugged switch. Fragile switches, therefore, increase the need for repair and replacement and, in general, increase the amount of time and effort required by maintenance personnel to keep the conveyor in operation. This problem was encountered more often by USER's.

Benefit: Withstands rugged application.

Hypothesis: Benefit relatively more important to USER's than to OEM's.

Problem Area #2: Some brands of limit switches are perceived as being more vulnerable to environmental hazards, such as dripping oil or water, dust in the air, corrosion, and extreme temperatures. These hazards cause switch failure and increase the need for repair and replacement. This problem was encountered more frequently by USER's than by OEM's.

Benefit #2: Withstands environmental hazards.

Hypothesis #2: Benefit relatively more important to USER's than to OEM's.

Problem Area #3: Some brands are perceived as being more difficult to maintain and repair when a breakdown occurs. This problem

was encountered more frequently by USER's than by OEM's.

Benefit #3: Ease of maintenance and repair.

Hypothesis #3: Benefit relatively more important to USER's than to OEM's. In support of H3, Sheth's model also hypothesizes that product user's evaluate alternative brands regarding "efficient serviceability" (Sheth, 1973, p. 52).

Problem Area #4: Some brands are perceived as requiring relatively more engineering time and effort to identify the correct switch and complete the electrical wiring diagrams. This problem was encountered more frequently by OEM's than by USER's.

Benefit #4: Requires less engineering time and effort.

Hypothesis #4: Benefit relatively more important to OEM's than to USER's.

Problem Area #5: Some brands were perceived as not having good distributors nationwide. A brand may have strong distributors in one section of the country and a spotty distribution elsewhere. This causes problems for OEM's since they must make sure that replacement parts are available in each customer's geographical area. This problem was encountered more frequently by OEM's than by USER's.

Benefit #5: Good distributors nationwide.

Hypothesis #5: Benefit is relatively more important to OEM's than to USER's.

Problem Area #6: Some brands are not specified by conveyor customers as often as other brands. OEM's prefer to avoid standardizing upon these non-specified brands because they would often be required to switch brands in order to meet customer specifications. In order to increase their working familiarity with limit switch brands,

OEM's prefer to standardize upon a brand acceptable to most USER's. This problem was unique to OEM's.

Benefit #6: Brand specified by many conveyor USER's.

Hypothesis #6: Benefit is relatively more important to OEM's than to USER's.

Problem Area #7: Limit switch brands are not all physically interchangeable due to different base size and bolting patterns. Some brands, however, are interchangeable. Therefore, switching among brands that are not interchangeable creates problems for the USER (i.e., must alter wiring diagrams to fit each switch). The problem of non-interchangeability was encountered by both OEM's and USER's.

Benefit #7: Physically interchangeable with other standard brands.

Problem Area #8: Some limit switch control catalogs are difficult to use because of unfamiliarity with catalog, poor indexing, or complex and confusing limit switch numbering systems. This problem was encountered by OEM's when ordering new limit switches and by USER's when ordering replacement parts.

Benefit #8: Control catalog easy to use.

Problem Area #9: Some limit switch brands do not offer a complete line of switches, actuator arms and heads. This forces both OEM's and USER's to deal with multiple brands, distributors, and catalogs. This problem was encountered by both OEM's and USER's.

Benefit #9: Manufacturer offers complete line of switches, actuator arms, and heads.

Problem Area #10: Some limit switch brands are perceived as not having the capability for proper object detection due to improper

pre-travel (i.e., the distance traveled by limit switch arm before the switch is activated), improper over-travel (i.e., the amount of arm travel allowed after the switch is activated), and improper actuator reset (the distance required for arm return before the switch can be reactivated). This problem area was encountered by OEM's when designing conveyor systems and by USER's when making limit switch adjustments.

Problem Area #11: Some brands are perceived as more difficult to modify and install than are other brands. These problems are encountered by OEM's during initial modification and installation and by USER's during subsequent modifications and installations.

Benefit #11: Ease of modification and installation.

Problem Area #12: Some brands are perceived as having a poor local distributor due to incomplete stock, long delivery time, poorly trained distributor sales personnel, and poor service when problems arise. These problems were encountered by both OEM's and USER's.

Benefit #12: Good local distributor delivery and service.

Problem Area #13: Some brands are priced higher than other brands. This problem was encountered by both OEM's and USER's.

Benefit #13: Priced lower than competition.

Problem Area #14: Product information and technical help are more difficult to obtain from some brands than from other brands. This problem was encountered by both OEM's and USER's.

Benefit #14: Information and technical help readily available.

Problem #15: Manufacturer's representatives are not readily available for all brands. This makes serious design or application problems more difficult to solve. The problem was encountered by both OEM's and USER's.

Benefit #15: Regular contact with manufacturer's representative.

Problem Area #16: Some limit switch brands are perceived as being unreliable over time. This problem was encountered by both OEM's and USER's.

Benefit #16: Performance reliability over equipment life.

Problem #17: Both OEM's and USER's did not feel confident about using a limit switch brand when they had had either an unsatisfactory past experience with the brand or no past experience with the brand. This problem was encountered by both OEM's and USER's.

Benefit #17: Satisfactory past experience with brand.

Magnetic Starter Purchasing Criteria and Hypotheses

Problem Area #1: An outside panel builder is employed by some conveyor manufacturers. These OEM's try to avoid standardizing upon a magnetic starter brand that is not acceptable to the panel builder. This problem was unique to OEM's.

Benefit Area #1: Outside panel builder's brand preference.

Hypothesis #1: This benefit is relatively more important to OEM's than to USER's.

Problem Area #2: Some brands are perceived as being more difficult to maintain and repair when a breakdown occurs. This problem area was encountered more frequently by USER's than by OEM's.

Benefit #2: Ease of maintenance and repair.

Hypothesis #2: Benefit realtively more important to USER's than to OEM's. In support of H#2, Sheth's model also hypothesizes that product user's evaluate alternative brands regarding "efficient serviceability" (Sheth, 1973, p. 52).

Problem Area #3: Some brands are perceived as requiring relatively more engineering time and effort to identify the correct magnetic starter and complete the electrical wiring diagrams. This problem was encountered more frequently by OEM's than by USER's.

Benefit #3: Requires less engineering time and effort.

Hypothesis #3: Benefit relatively more important to OEM's than to USER's.

Problem Area #4: Some brands are perceived as not having good distributors nationwide. A brand may have strong distributors in one section of the country and a spotty distribution elsewhere. This causes problems for OEM's since they must make sure that replacement parts are available in each customer's geographical area. This problem was encountered more frequently by OEM's than by USER's.

Benefit #4: Good distributors nationwide.

Hypothesis #4: Benefit is relatively more important to OEM's than to USER's.

Problem Area #5: Some brands are not specified by conveyor customers as often as other brands. OEM's prefer to avoid standardizing upon these non-specified brands because they would often be required to switch brands in order to meet customer specifications. In order to increase their working familiarity with magnetic starter brands, OEM's prefer to standardize upon a brand acceptable to most USER's. This problem was unique to OEM's.

Benefit #5: Brand specified by many conveyor USER's.

Hypothesis #5: Benefit is relatively more important to OEM's than to USER's.

Problem Area #6: Some magnetic starters are perceived as taking up too much panel space because of their size. Using large starters results in fewer starters fitting in each control panel (i.e., higher design cost) and makes starter maintenance difficult due to less working space. This problem area was encountered by both OEM's and USER's.

Benefit #6: Starter size and required panel space.

Problem Area #7: Some brands are perceived as more difficult to modify and install than are other brands. These problems are encountered by OEM's during initial modification and installation and by USER's during subsequent modifications and installations.

Beneift #7: Ease of modification and installation.

Problem Area #8: Some magnetic starter control catalogs are difficult to use because of unfamiliarity with catalog, poor indexing, or complex and confusing magnetic starter numbering systems. This problem was encountered by OEM's when ordering new magnetic starters and by USER's when ordering replacement parts.

Benefit #8: Control catalog easy to use.

Problem Area #9: Some brands are perceived as having a poor local distributor due to incomplete stock, long delivery time, poorly trained distributor sales personnel, and poor service when problems arise. These problems were encountered by both OEM's and USER's.

Benefit #9: Good local distributor delivery and service.

Problem Area #10: Some brands are priced higher than other brands. This problem was encountered by both OEM's and USER's.

Benefit #10: Priced lower than competition.

Problem Area #11: Product information and technical help are more difficult to obtain from some brands than from other brands. This problem was encountered by both OEM's and USER's.

Benefit #11: Information and technical help readily available.

Problem Area #13: Some magnetic starter brands are perceived as being unreliable over time. This problem was encountered by both OEM's and USER's.

Benefit #13: Performance reliability over equipment life.

Problem Area #14: Both OEM's and USER's did not feel confident about using a magnetic starter brand when they had had either an unsatisfactory past experience with the brand or no past experience with the brand. This problem was encountered by both OEM's and USER's.

Benefit #14: Satisfactory past experience with brand.

Conclusive Research Phase

This research phase was designed to quantiatively measure the importance of seventeen limit switch purchasing criteria and fourteen magnetic starter purchasing criteria for OEM and USER buying influences.

Operational Measure of Criteria Importance

Purchasing criteria importance was measured on a five-point relative importance scale similar to the scale used by Lehmann and O'Shaughnessy (1974). The purpose of this scale is to measure the relative importance of each purchasing criterion by allowing respondents to compare and contrast each criterion on the basis of their relative importance. The relative importance of limit switch and magnetic starter purchasing criteria was operationally measured as follows:

5 MOST IMPORTANT 4 3 AVERAGE IMPORTANCE 2 1 LEAST IMPORTANT	"Each criterion may be important to you but try to rate the relative importance of each criterion when it is compared and contrasted to the other criteria on the list. Please read the entire list and then use the rating scale to the left to rate the relative importance of each criterion."

Questionnaire Design and Pretest

The questionnaires used to measure criteria importance for OEM and USER buying influences are found in Appendix A and B, respectively. These questionnaires are identical except where different instruction wording was more appropriate for to fit OEM and USER buying influences. Specifically, OEM buying influences were instructed to rate the importance of each criterion when "selecting a manufacturer's brand of

limit switch to purchase when your conveyor customer has no brand preference" (see OEM questionnaire, Appendix A). USER buying influences were instructed to rate the importance of each criterion when "selecting a manufacturer's brand to specify to the manufacturer of your firm's new conveying equipment" (see USER questionnaire, Appendix B).

The questionnaires were pretested by first mailing the questionnaire to identified buying influences in five Michigan conveyor manufacturing organizations and five Michigan conveyor using organizations. Each buying influence was then personally interviewed regarding their interpretation of each aspect of the questionniare and the completeness of the criteria list. No interpretation problems were encountered and the criteria list was considered complete. The questionniare was concluded to be valid and pretest data was included with the final data collected for hypothesis testing. The specific procedure used to identify buying influences for questionnaire pretest and final data collection is described subsequently under OEM and USER mail survey section.

Data Collection Procedure

Final data collection was accomplished through a mail survey. Preliminary telephone interviewing was used to locate buying influences within each organization contacted. The procedures used to develop the list of prospective conveyor manufacturers and conveyor using organizations are subsequently described.

OEM Mail Survey

A list of prospective conveyor manufacturing organizations was compiled from the membership list of the Conveyor Equipment Manufacturers Association and from Standard and Poor's Directory of

Manufacturing (1973).

A telephone screening procedure was used to qualify companies as valid prospects for the mail questionnaire. Exploratory research had previously indicated that the major brand buying influence was normally located in the engineering department. A telephone call was first made to the head of engineering, usually the chief engineer. The research project was then described as a doctoral dissertation research project studying the criteria used to select limit switch and magnetic starter brands for use on new conveying equipment. If this question was answered affirmatively, the official was then asked for the name of the organizational member most influential in selecting limit switch and magnetic starter brands. Referrals were normally made to the chief electrical engineer, an electrical engineer, or to another engineering official who had specialized in electrical design. This procedure was followed until a brand buying influence was located through self admission. That is, the individual stated that he was in fact the person who selected limit switch and magnetic starter brands to be purchased for new conveying equipment. This individual was then asked what criterion was important in brand selection. If the individual did in fact provide reasons why he selected a particular brand, it was concluded that the individual qualified as a brand buying influence. The individual was then asked if a questionnaire could be mailed. Permission was granted in all but one case. It was felt that prior permission would result in an informal commitment to return the completed questionnaire. Permission was granted in all but one conveyor manufacturing company that purchased these components.

The above procedure resulted in identifying buying influences in one hundred and thirty-two conveyor manufacturing organizations. Questionnaires and stamped return envelopes were mailed to each OEM buying influence. Questionniares were numerically coded to monitor the return of each questionnaire. Three follow-up telephone calls were made in order to increase the return rate. The final OEM questionnaire return rate was ninety questionnaires or sixty-eight percent of the defined population (see Table I below).

TABLE 1

CONVEYOR OEM MAIL SURVEY RETURN RATE

Source of OEM List	Number Sent	Number Returned	Percent Returned
Conveyor Equipment Mgf.'s Association	43	27	63
Standard and Poors	89	63	71
Total	132	90	68

For inferential purposes, the OEM population was operationally defined as the one hundred and thirty-two buying influences identified in conveyor manufacturing organizations. There is no evidence that questionnaire respondents systematically differed from non-respondents. For inferential purposes, therefore, it was assumed that respondents were randomly selected from the defined OEM buying influence population (i.e., 132 buying influences).

USER Mail Survey

Exploratory research among conveyor OEM buying influences had previously indicated that the larger organizations in fourteen industries often specified their limit switch and/or magnetic starter brand choice to conveyor manufacturers. Since the objective of this study was to measure criteria importance for only actual brand buying influences who did in fact specify their limit switch and magnetic starter brand preferences to conveyor manufacturers.

First, trade associations for each of fourteen industries were contacted and asked to provide the names of the fifteen companies judged to be the largest in that industry. A telephone screening procedure was employed to identify the primary brand specifying influence and to eliminate companies that did not specify limit switch and magnetic starter brands on conveying equipment.

Exploratory research had previously indicated that maintenance or plant engineering personnel normally specified limit switch and magnetic starter brands that they preferred. Each organization was initially contacted by telephoning a high ranking member of the manufacturing department, such as the plant manager, to determine if the organization did use conveying equipment with either limit switches or magnetic starter components and if the company would be likely to specify these component brands on future conveying equipment. If the replies were affirmative, the research project was described as doctoral dissertation research studying the criteria used to specify limit switch and magnetic starter brands. The individual was then asked which organizational member most likely would specify the brands on future conveying equipment. Referrals were normally made to technical

personnel, such as the chief electrical engineer, electrical engineer, plant engineer, maintenance manager, maintenance personnel, chief electrician, or electrician.

Referrals were followed until a primary brand specifying influence was identified by self-admission. This individual would then be asked what specific criterion would be important when specifying limit switch and/or magnetic starter brands. If the individual did in fact provide criteria or reasons for brand choice, it was concluded that a qualified brand specifying influence had been identified. The study was then explained and permission requested to send the mail questionnaire. Permission was granted in all cases.

The above procedure was terminated when twelve buying influences were located in each of fourteen industries. A total of one hundred and sixty-eight mail questionnaires were sent to USER buying influences. This number was considered sufficiently large for organizational buying research and represented twelve of the largest conveyor using organizations across each of the fourteen industries studied.

Three follow-up telephone calls were made in order to increase the USER questionnaire return rate. A total of one hundred and nine USER questionnaires were returned, or a return rate of sixty-five percent. Return rate by industry ranged from thirty-three percent to eighty-three percent, as seen in Table 2 below.

For inferential purposes, the USER buying influence population was defined as the one hundred and sixty-eight buying influences located in the larger organizations across the fourteen conveyor using industries indicated in Table 2. There was no evidence that questionnaire respondents systematically differed from non-respondents. For

inferential purposes, it is assumed that respondents are representative of the defined USER population.

TABLE 2

CONVEYOR USER MAIL SURVEY RETURN RATE

USER Industries and S.I.C.[1] Number	Number Sent	Number Returned	Percent Returned
Beer (2082)	12	10	83
Canned Fruit/Vegetables (2033)	12	9	75
Cigarette (2111)	12	7	58
Coal (1211)	12	6	50
Dairy (2026)	12	9	75
Farm Equipment (3523)	12	8	67
Foundries (3321)	12	8	67
Iron/Copper Mining (1011/1021)	12	7	58
Liquor (2085)	12	4	33
Paper (2621)	12	9	75
Soft Drink (2086)	12	8	67
Steel (3311)	12	10	83
Sugar (2062/2063)	12	7	58
Textiles (2211)	12	7	58
Total	168	109	65

[1]Standard Industrial Classification Number

CHAPTER IV

EMPIRICAL RESULTS AND HYPOTHESIS TESTING

Chapter IV analyzes conveyor OEM and conveyor USER criteria importance ratings for significant differences. Usable questionnaires were received from a total of ninety conveyor OEM buying influences (68 percent) and one hundred and nine conveyor USER buying influences (65 percent). Each limit switch purchasing criterion was rated by a minimum of eighty-seven OEM's (66 percent) and one hundred and three USER's (61 percent). Each magnetic starter purchasing criterion was rated by a minimum of eighty OEM's (61 percent) and one hundred and one USER's. (60 percent).

Analysis of OEM and USER criteria importance ratings is divided into two basic sections. First, criteria importance ratings are averaged for each group and rank ordered from most important to least important. The resulting OEM and USER criteria importance rank orders are analyzed for overall similarities and differences.

Second, the magnitude differences between OEM and USER average criteria importance ratings are analyzed for significant differences. Here, magnitude differences are first analyzed for overall significant differences where all criteria are analyzed simultaneously. Magnitude differences are then analyzed for individual criteria. Each analysis section will be performed for both limit switch purchasing criteria and magnetic starter purchasing criteria. This chapter concludes with a results summary.

Average Criteria Importance Rank Order: OEM vs USER

The importance of seventeen limit switch purchasing criteria and fourteen magnetic starter purchasing criteria to conveyor OEM and conveyor USER buying influences were measured using a relative importance scale of "1" (i.e., least important) to "5" (i.e., most important) as described in Chapter III. This section compares the rank order of average or mean criteria importance for OEM and USER buying influences. OEM and USER criteria importance rank orders are first statistically analyzed for significant (.05) rank order similarities. Second, rank order differences are analyzed.

Limit Switch Purchasing Criteria

Average limit switch criteria importance values and criteria rank order for OEM and USER buying influences are found in Table 3.

Null Hypothesis 1: There is no significant (.05) association between OEM and USER average limit switch criteria importance.

HO: $R_{oem} \not\sim R_{user}$

H1: $R_{oem} \sim R_{user}$

This hypothesis is tested using Kendall's coefficient of concordance which is designed to determine if two internal rank order structures are significantly similar. The computed "W" statistic ranges from 0 (i.e., no internal rank order agreement) to 1 (i.e., perfect rank order agreement. The significance of the "W" statistics is computed using chi square analysis (McNemar, 1969; Siegel, 1956).

TABLE 3

LIMIT SWITCH PURCHASING CRITERIA RANKED BY AVERAGE CRITERIA IMPORTANCE ($\bar{X}$): OEM VS USER[1]

Limit Switch Purchasing Criteria	OEM $\bar{X}$	OEM Rank	USER $\bar{X}$	USER Rank	Rank Order Differences
Performance reliability over equipment life	4.61	1	4.58	3	2
Satisfactory past experience with brand	4.26	2	4.26	4	2
Withstands rugged applications	4.17	3	4.69	1	2
Withstands environmental hazards	3.97	4	4.61	2	2
Good local distributor delivery and service	3.84	5	4.05	6	1
Manufacturer offers complete line of switches, actuator arms and heads	3.70	6	4.14	5	1
Proper pre-travel, over-travel, and actuator reset	3.66	7	4.02	7	0
Control catalog easy to use	3.60	8	3.48	9	1
Information/technical help readily available	3.59	9	3.37	11	2
Ease of modification and installation	3.47	10	3.46	10	0
Requires less engineering time and effort	3.30	11	2.70	13	2
Good distributor nationwide	3.19	12	2.55	14	2
Ease of maintenance and repair	3.10	13	4.00	8	5
Priced lower than competition	2.80	14	2.46	15	1
Physical interchangeability with other standard brands	2.65	15	2.94	12	3
Brand specified by many conveyor users	2.45	16	1.89	17	1
Regular contact with manufacturer's representative	2.15	17	2.29	16	1

[1]Highest importance rank equals 1, lowest equals 17.

Results: Computed Kendall's W, .96; significance, $\leq$ .02 (computed chi square, 30.67 with 16 degrees of freedom).

Results support the rejection of null hypothesis 1 and suggest that the OEM and USER rank orders are more similar than would be expected by chance alone. Null hypothesis 1 is rejected.

Table 3 indicates OEM and USER rank order similarity is not perfect and that rank order differences do exist. Analysis of rank order differences by criterion reveals that a disproportionately high number of these rank order differences are associated with criteria hypothesized to differ between OEM and USER buying influences. Table 4 summarizes the analysis of rank order differences between hypothesized and non-hypothesized limit switch purchasing criteria. The six hypothesized criteria represent thirty-five percent of limit switch purchasing criteria but are associated with fifty percent of the OEM-USER rank order differences or an average rank order difference of 2.33. The non-hypothesized criteria represent sixty-five percent of limit switch purchasing criteria and are assocaited with only fifty percent of the OEM-USER rank order differences or an average rank order difference of 1.27.

Further, Table 4 indicates that each limit switch criterion hypothesized to be more important to a particular buying influence group was in fact ranked higher by that group. The hypothesized criterion "ease of maintenance and repair" received an OEM rank of thirteen and a USER rank of eight and the largest rank order difference of five. The second largest rank order difference, however, was associated with a non-hypothesized criterion "physical interchangeability with other standard brands" which was ranked fifteenth by OEM's

TABLE 4

ANALYSIS OF OEM-USER LIMIT SWITCH RANK ORDER DIFFERENCES: HYPOTHESIZED CRITERIA VS NON-HYPOTHESIZED CRITERIA[1]

Limit Switch Purchasing Criteria	OEM Rank	Hypothesized Higher Rank	USER Rank	Rank Order Differences
Six Hypothesized Criteria:				
Withstands rugged applications	3	user	1	2
Withstands environmental hazards	4	user	2	2
Ease of maintenance and repair	13	user	8	5
Requires less engineering time and effort	11	oem	13	2
Good distributors nationwide	12	oem	14	2
Brand specified by many conveyor users	16	oem	17	1
		Total rank order differences: 14		
		Average rank order differences: 2.33		
Eleven Non-Hypothesized Criteria:				
Performance reliability over equipment life	1	none	3	2
Satisfactory past experience with brand	2	none	4	2
Good local distributor delivery and service	5	none	6	1
Manufacturer offers complete line of switches, actuator arms and heads	6	none	5	1
Proper pre-travel, over-travel, and actuator reset	7	none	7	0
Control catalog easy to use	8	none	9	1
Information/technical help readily available	9	none	11	2
Ease of modification and installation	10	none	10	0
Priced lower than competition	14	none	15	1
Physical interchangeability with other standard brands	15	none	12	3
Brand specified by many conveyor users	17	none	16	1
		Total rank order differences: 14		
		Average rank order differences: 1.27		

[1]Highest importance rank equals 1, lowest equals 17.

and twelfth by USER's.

In general it is concluded that OEM and USER limit switch criteria importance rank orders are significantly similar. The hypothesized criteria, however, appear to be associated with a disproportionately higher number of existing rank order differences and these differences were all in the predicted direction.

Magnetic Starters

Average magnetic starter criteria importance values and criterion rank order for OEM and USER buying influences are found in Table 5.

Null Hypothesis 2: There is no significant (.05) association between OEM and USER average magnetic starter purchasing criterion rank order.

Ho: $R_{oem} \not\sim R_{user}$

Hl: $R_{oem} \sim R_{user}$

Results: Computed Kendall's W, .94; significance, $\leq$ .03 (computed chi square, 24.41 with 13 degrees of freedom)

These results support the rejection of null hypothesis 2 and it is concluded that OEM and USER magnetic starter average criteria importance rank orders are more similar than would be expected by chance. Null hypothesis 2 is rejected.

Analysis of OEM-USER criteria importance rank order differences are found in Table 6. This analysis indicates that a disproportionately high number of rank order differences are associated with criteria hypothesized to differ in importance between OEM and USEr buying influences. Table 6 indicates that the five criteria hypothesized

TABLE 5

MAGNETIC STARTER PURCHASING CRITERIA RANKED BY AVERAGE CRITERIA IMPORTANCE (X): OEM VS USER[1]

Magnetic Starter Purchasing Criteria	OEM X	OEM Rank	USER X	USER Rank	Rank Order Differences
Performance reliability over equipment life	4.35	1	4.56	1	0
Satisfactory past experience with brand	4.28	2	4.48	2	0
Good local distributor delivery and service	4.00	3	4.20	4	1
Information/technical help readily available	3.79	4	3.73	6	2
Ease of modification and installation	3.78	5	3.91	5	0
Control catalog easy to use	3.68	6	3.58	7	1
Requires less engineering time and effort	3.65	7	3.04	9	2
Starter size and required panel space	3.53	8	3.32	8	0
Ease of maintenance and repair	3.52	9	4.47	3	6
Good distributors nationwide	3.43	10	2.84	10	0
Priced lower than competition	2.85	11	2.66	11	0
Regular contact with manufacturer's representative	2.67	12	2.58	12	0
Brand specified by many conveyor users	2.61	13	1.87	14	1
Outside panel builder's brand preference	2.03	14	1.90	13	1

[1]Highest importance rank equals 1, lowest equals 14.

TABLE 6

ANALYSIS OF OEM-USER MAGNETIC STARTER RANK ORDER DIFFERENCES: HYPOTHESIZED CRITERIA VS NON-HYPOTHESIZED CRITERIA[1]

Magnetic Starter Purchasing Criteria	OEM Rank	Hypothesized Higher Rank	USER Rank	Rank Order Differences
Five Hypothesized Criteria:				
Requires less engineering time and effort	7	oem	9	2
Ease of maintenance and repair	9	user	3	6
Good distributors nationwide	10	oem	10	0
Brand specified by many conveyor users	13	oem	14	1
Outside panel builder's brand preference	14	oem	13	1
		Total rank order differences:		10
		Average rank order differences:		2.00
Nine Non-Hypothesized Criteria:				
Performance reliability over equipment life	1	none	1	0
Satisfactory past experience with brand	2	none	2	0
Good local distributor delivery and service	3	none	4	1
Information/technical help readily available	4	none	6	2
Ease of modificationa dn installation	5	none	5	0
Control catalog easy to use	6	none	7	1
Starter size and required panel space	8	none	8	0
Priced lower than competition	11	none	11	0
Regular contact with manufacturer's representative	12	none	12	0
		Total rank order differences:		4
		Average rank order differences:		0.44

[1]Highest importance rank equals 1, lowest equals 14.

to differ are associated with ten rank order differences or an average rank order difference of 2.00. The nine non-hypothesized criteria are associated with only four rank order differences or an average rank order difference of 0.44.

The largest rank order difference of six was associated with the hypothesized criterion "ease of maintenance and repair" which received an OEM rank of nine and a USER rank of three. This large rank order difference was in the predicted direction.

Two hypothesized criteria did not differ in the hypothesized direction. The criterion "good distributors nationwide" did not differ as hypothesized and received an equal rank by OEM's and USER's. The criterion "outside panel builder's brand preference" received a rank order difference of one, but this difference was not in the direction predicted. However, it should be pointed out that while the rank order differences for these two criteria were not as predicted, the difference in the mean importance scores were small (i.e., 0.13) as seen in Table 5. Further, this small magnitude difference was in the predicted direction. It should be recognized, therefore, that rank order analysis reveals general patterns but is weak in the sense that magnitude differences between specific criteria are not considered.

In general it is concluded that OEM and USER buying influences have similar overall magnetic starter purchasing criteria importance rank orders and that a disproportionately higher number of rank order differences are associated with hypothesized criteria than with non-hypothesized criteria. Nine of the ten rank order differences associated with hypothesized criteria were in the predicted direction and six of these nine rank order differences are associated with the

criterion "ease of maintenance and repair."

The following section presents a more powerful analysis of the magnitude differences between OEM and USER criteria importance ratings.

Magnitude Differences: OEM vs USER Criteria Importance Ratings

This section analyzes OEM and USER criteria importance ratings for significant magnitude differences. Multivariate analysis of variance is used to test for overall significant differences across all criteria simultaneously and t-tests are used to test for significant differences for individual criteria.

Multivariate Analysis of Overall Criteria Importance Differences

Multivariate analysis of variance (MANOVA) is utilized to test for overall hypothesized differences in purchasing criteria importance between OEM and USER buying influences. The advantage of MANOVA over univariate statistical techniques such as t-test lies in its ability to analyze for criteria importance differences across all criteria simultaneously and provide a calculation of the overall probability that observed differences are significant. That is, one significance value is calculated for all criteria importance differences rather than for each criterion individually.

Limit Switch Purchasing Criteria

Null Hypothesis 3: There is no overall significant (.05) difference in the relative importance ratings across seventeen limit switch purchasing criteria between OEM and USER buying influences.

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} \neq U_{user}$,

where U_{oem} and U_{user} refer to the OEM and USER population criteria importance means for seventeen limit switch purchasing criteria. U_{oem} and U_{user} are estimated by sample means, $\bar{X}_{oem}$ and $\bar{X}_{user}$, respectively, as seen below in Table 7.

TABLE 7

LIMIT SWITCH PURCHASING CRITERIA IMPORTANCE MEANS ($\bar{X}$): OEM VS USER

Limit Switch Purchasing Criteria	OEM S.D.	$\bar{X}_{oem}$ (N=87)	$\bar{X}_{user}$ (n=103)	USER S.D.
Perf. reliability	0.98	4.41	4.58	0.78
Past experience	0.80	4.26	4.26	0.82
Rugged switch	0.96	4.17	4.69	0.54
Withstands hazards	1.09	3.97	4.61	0.68
Local distributor	1.16	3.84	4.05	1.05
Complete line	1.12	3.70	4.14	0.87
Travel and reset	1.11	3.66	4.02	0.92
Control catalog	1.04	3.60	3.48	1.12
Inf./tech. help	1.07	3.59	3.37	1.00
Installation/modif.	1.04	3.47	3.46	.96
Engineering time	1.13	3.30	2.70	1.13
Nat'l. distributors	1.26	3.19	2.55	1.37
Maintenance/repair	1.12	3.10	4.00	0.97
Lower price	1.14	2.80	2.46	0.98
Interchangeability	1.26	2.65	2.94	1.17
User specifications	1.21	2.45	1.89	1.03
Manufacturer's rep.	1.12	2.15	2.29	1.04

Results: MANOVA F, 7.25; significance, $\leq$ .001 with 177 degrees of freedom.

The data strongly support the rejection of null hypothesis 3 and it is concluded that there are overall significant differences in

the importance of seventeen limit switch purchasing criteria between OEM and USEr buying influences. Null hypothesis 3 is rejected.

Magnetic Starter Purchasing Criteria

Null Hypothesis 4: There is no overall significant (.05) difference in the relative importance ratings of fourteen magnetic starter purchasing criteria between OEM and USER buying influences.

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} \neq U_{user}$,

where U_{oem} and U_{user} refer to the OEM and USEr population criterion importance means for fourteen magnetic starter purchasing criteria. U_{oem} and U_{user} are estimated by sample means, $\bar{X}_{oem}$ and $\bar{X}_{user}$, respectively, as seen in Table 8 below.

TABLE 8

MAGNETIC STARTER PURCHASING CRITERIA
IMPORTANCE MEANS ($\bar{X}$): OEM VS USER

Limit Starter Purchasing Criteria	OEM S.D.	$\bar{X}_{oem}$ (N=80)	$\bar{X}_{user}$ (N=101)	USER S.D.
Performance reliability	0.84	4.35	4.56	0.68
Past experience	0.79	4.28	4.48	0.65
Local distributor	1.08	4.00	4.20	1.00
Inf./tech. help	1.01	3.79	3.73	1.06
Installation/modif.	0.88	3.78	3.91	0.81
Control catalog	1.07	3.68	3.58	1.08
Engineering time	0.95	3.65	3.04	1.09
Starter size	1.06	3.53	3.32	1.21
Maintenance/repair	1.04	3.52	4.47	0.68
Nat'l./distributors	1.14	3.43	2.84	1.36
Lower price	1.20	2.85	2.66	1.09
Manufacturer's rep.	1.26	2.67	2.58	1.15
User specifications	1.18	2.61	1.87	1.01
Panel bld's. pref.	1.15	2.03	1.90	1.14

Results: MANOVA F, 8.41, significance, $\leq$.001 with 167 degrees of freedom.

The data strongly support the rejection of null hypothesis 4 and it is concluded that there is a significant difference in the overall importance of fourteen magnetic starter purchasing criteria between OEM and USER buying influences. Null hypothesis 4 is rejected.

In general it is concluded that the overall observed differences between OEM and USER criterion importance ratings were significant ($\leq$.001) and would not have been expected by chance alone. The following section analyzes individual criteria for significant differences.

Individual Criteria Importance Differences: Univeriate Analysis

This section analyzes magnitude differences between the average OEM and USER criteria importance ratings on each individual purchasing criterion for both products.

Limit Switch Purchasing Criteria

The importance of six limit switch purchasing criteria were hypothesized to be significantly more important to either OEM buying influences or USER buying influences, as described in Chapter III. Table 9 compares the predicted and actual direction of mean ($\bar{X}$) criteria importance differences for these six hypothesized criteria. Table 9 indicates that the direction of the differences between OEM and USER mean criteria importance was correctly predicted for all six hypothesized limit switch purchasing criteria. The significance of

TABLE 9

PREDICTED AND OBSERVED DIRECTION OF MEAN ($\bar{X}$) IMPORTANCE RATINGS FOR SIX LIMIT SWITCH PURCHASING CRITERIA HYPOTHESIZED TO SIGNIFICANTLY DIFFER BETWEEN OEM AND USER BUYING INFLUENCES

Criterion	OEM			USER			Direction of Mean Difference (OEM - USER)	
	Mean ($\bar{X}$)	S.D.[1]	N[2]	Mean ($\bar{X}$)	S.D.[1]	N[2]	Predicted	Observed
Rugged switch	4.17	0.96	88	4.69	0.54	105	<	<
Withstands hazards	3.97	1.09	88	4.61	0.68	103	<	<
Maintenance/repair	3.10	1.12	89	4.00	0.97	105	<	<
Engineering time	3.30	1.13	87	2.70	1.13	104	>	>
Nat'l. distributors	3.19	1.26	89	2.55	1.37	105	>	>
User specifications	2.45	1.21	87	1.89	1.03	105	>	>

[1]Standard deviation (S.D.)

[2]Sample size (N)

these hypothesized differences are tested below using a one-tailed t-test (.01).

Null Hypothesis 5a: There is no significant difference between OEM and USER criteria importance ratings for the limit switch purchasing criteria "withstands rugged application."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} > U_{user}$

Results: Computed t, 4,47; significance, $\leq .001$; n = 193.

The data strongly support the rejection of null hypothesis 5a and it is concluded that the limit switch purchasing criterion "withstands rugged application" is relatively more important to USER buying influences than it is to OEM buying influences. Null hypothesis 5a is rejected.

Null Hypothesis 5b: There is no significant (.01) difference between OEM and USER criteria importance ratings for the limit switch purchasing criterion "withstands environmental hazards."

Ho: $U_{oem} = U_{user}$

Hl: $U_{oem} > U_{user}$

Results: Computed t, 4,83; significance, $\leq$.001; n = 191.

The data strongly support the rejection of null hypothesis 5b and it is concluded that the limit switch purchasing criterion "withstands environmental hazards" is relatively more important to USER buying influences than it is to OEM buying influences. Null hypothesis 5b is rejected.

Null Hypothesis 5c: There is no significant (.01) difference between OEM and USER criteria importance ratings for the limit switch purchasing criterion "ease of maintenance and repair."

Ho: $U_{oem} = U_{user}$

Hl: $U_{oem} > U_{user}$

Results: Computed t, 5.92; significance, $\leq$.001; n = 191.

The data strongly support the rejection of null hypothesis 5c and it is concluded that the limit switch purchasing criterion "ease of maintenance and repair" is relatively more important to USER buying influences than it is to OEM buying influences. Null hypothesis 5c

is rejected.

Null Hypothesis 5d: There is no significant difference between OEM and USER criteria importance ratings for the limit switch purchasing criterion "requires less engineering time and effort."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} \quad U_{user}$

Results: Computed t, 3.63; significance, $\leq .001$; n = 191.

The data strongly support the rejection of null hypothesis 5d and it is concluded that the limit switch purchasing criterion "requires less engineering time and effort" is relatively more important to OEM buying influences than it is to USER buying influences. Null hypothesis 5d is rejected.

Null Hypothesis 5e: There is no significant difference between OEM and USER criteria importance ratings for the limit switch purchasing criterion "good distributors nationwide."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} \quad U_{user}$

Results: Computed t, 3.38; significance, $\leq .001$; n = 194.

The data strongly support the rejection of null hypothesis 5e and it is concluded that the limit switch purchasing criterion "good distributors nationwide" is relatively more important to OEM buying influences than it is to USER buying influences. Null hypothesis 5e is rejected.

Null Hypothesis 5f: There is no significant difference between OEM and USER criteria importance ratings for the limit switch purchasing criterion "brand specified by many conveyor users."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} > U_{user}$

Results: Computed t, 3.34; significance, $\leq .001$; n = 192.

The data strongly support the rejection of null hypothesis 5f and it is concluded that the limit switch purchasing criterion "brand specified by many conveyor users" is relatively more important to OEM buying influences than it is to USER buying influences. Null hypothesis 5f is rejected.

All six limit switch criteria specifically hypothesized to differ were highly significant in the hypothesized direction. These results support the contention that criteria importance differences between OEM and USER buying influences reflect the different problems faced by each group, as described in Chapter III.

Non-hypothesized limit switch criteria importance differences are now analyzed in order to provide an overall comparison with the significant differences found for hypothesized criteria. Table 10 ranks all seventeen limit switch purchasing criteria by the magnitude of the difference between OEM and USER criterion importance ratings. The t-test is employed to provide some comparison of the significance of the differences found for hypothesized and non-hypothesized criteria. Since these t-tests are not based upon independent samples, the probability of finding apparent significant differences due to chance may increase with the number of tests performed. Therefore, differences will be analyzed for overall patterns rather than focusing upon each criterion individually.

TABLE 10

ANALYSIS OF DIFFERENCES BETWEEN OEM AND USER AVERAGE
LIMIT SWITCH CRITERIA IMPORTANCE

Limit Switch Purchasing Criterion	OEM			USER			Mean Difference (OEM-USER)	t Value	Sig.[1] (≤)
	Mean	S.D.	N	Mean	S.D.	N			
Maintenance	3.10	1.12	89	4.00	0.97	105	-.90	5.92	.005*
Withstands hazards	3.97	1.09	88	4.61	0.68	103	-.64	4.83	.001*
Dist. nationwide	3.19	1.26	89	2.55	1.37	105	+.64	3.38	.001*
Engineering time	3.30	1.13	87	2.70	1.13	104	+.60	3.63	.000*
User specifications	2.45	1.21	87	1.89	1.03	105	+.56	3.34	.001*
Rugged switch	4.17	0.96	88	4.69	0.54	105	-.52	4.47	.000*
Complete line	3.70	1.12	88	4.14	0.87	105	-.44	3.00	.003
Travel and reset	3.66	1.11	88	4.02	0.92	104	-.36	2.41	.017
Lower price	2.80	1.14	87	2.46	0.98	105	+.34	2.24	.026
Interchangeability	2.65	1.26	89	2.94	1.17	105	-.29	1.66	.099
Inf./tech. help	3.59	1.07	88	3.37	1.00	105	+.22	1.46	.145
Local distributor	3.84	1.16	88	4.05	1.05	105	-.21	1.28	.201
Perf. Reliability	4.41	0.78	88	4.58	0.70	105	-.17	1.57	.118
Manufacturer's rep.	2.15	1.12	88	2.29	1.04	105	-.14	0.88	.379
Catalog easy to use	3.60	1.04	88	3.48	1.12	105	-.12	0.60	.547
Installation/modif.	3.47	1.04	89	3.46	0.96	105	+.01	0.10	.919
Past experience	4.26	0.80	88	4.26	0.82	105	.00	--	--

[1]Significance value, two tailed t-test

*Hypothesized to differ significantly, .01

Table 10 indicates that the six largest differences between OEM and USER criterion importance ratings were found on criteria hypothesized to differ. Under formal hypothesis testing, only one of the non-hypothesized criterion differences would have been judged significant (i.e., Manufacturer offers complete line of switches, actuator arms, and heads). These findings provide further support for the conclusion that the larger differences between OEM and USER criteria importance ratings samples reflect population differences rather than chance sampling fluctuations.

Magnetic Starter Purchasing Criteria

The importance of five magnetic starter purchasing criteria were hypothesized to be significantly more important to either OEM's or USER's, as described in Chapter III. Table 11 below compares the predicted and observed direction of OEM-USER mean ($\bar{X}$) criteria importance differences for these five criteria.

Table 11 indicates that the differences between the mean criterion importance ratings observed in the data were all in the hypothesized direction. The significance of these hypothesized differences are tested below using one-tailed t-tests (.01).

TABLE 11

PREDICTED AND OBSERVED DIRECTION OF MEAN ($\bar{X}$) IMPORTANCE RATINGS FOR FIVE MAGNETIC STARTER PURCHASING CRITERIA HYPOTHESIZED TO SIGNIFICANTLY DIFFER BETWEEN OEM AND USER BUYING INFLUENCES

Hypothesized Criterion	OEM			USER			Direction of Mean Difference (OEM - USER)	
	Mean ($\bar{X}$)	S.D.[1]	N[2]	Mean ($\bar{X}$)	S.D.[1]	N[2]	Predicted	Observed
Meaintenance/repair	3.52	1.04	81	4.47	0.68	103	>	>
Engineering time	3.65	0.95	81	3.04	1.09	103	<	<
Nat'l. distributors	3.43	1.14	81	2.84	1.36	102	<	<
User specifications	2.61	1.18	80	1.87	1.01	103	<	<
Panel bld's. pref.	2.03	1.15	80	1.90	1.14	102	<	<

[1]Standard deviation (S.D.)

[2]Sample size (N)

Null Hypothesis 6a: There is no significant (.01) difference between OEM and USER criteria importance ratings for the magnetic starter purchasing criterion "ease of maintenance and repair."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} > U_{user}$

Results: Computed t, 7.09, significance, $\leq$.001; n = 184.

The data strongly support the rejection of null hypothesis 6a and it is concluded that the magnetic starter purchasing criterion "ease of maintenance and repair" is relatively more important to USER buying influences than it is to OEM buying influences. Null hypothesis

6a is rejected.

Null Hypothesis 6b: There is no significant (.01) difference between OEM and USER criteria importance ratings for the magnetic starter purchasing criterion "requires less engineering time and effort."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} > U_{user}$

Results: Computed t, 4.08; significance, $\leq$.001; n = 184.

The data strongly support the rejection of null hypothesis 6b and it is concluded that the magnetic starter purchasing criterion "requires less engineering time and effort" is relatively more important to OEM buying influences than it is to USER buying influences.

Null Hypothesis 6c: There is no significant (.01) difference between OEM and USER criteria importance ratings for the magnetic starter purchasing criterion "good distributors nationwide."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} > U_{user}$

Results: Computed t, 3.18; significance, $\leq$.002; n = 183.

The data strongly support the rejection of null hypothesis 6c and it is concluded that the magnetic starter purchasing criterion "good distributors nationwide" is relatively more important to OEM buying influences than it is to USER buying influences.

Null Hypothesis 6d: There is no significant difference between OEM and USER criteria importance ratings for the magnetic starter purchasing criterion "brand specified by many conveyor users."

Ho: $U_{oem} = U_{user}$

H1: $U_{oem} > U_{user}$

Results: Computed t, 4.49; significance, $\leq$.001; n = 183.

The data strongly support the rejection of null hypothesis 6d and it is concluded that the magnetic starter purchasing criterion "brand specified by many conveyor users" is relatively more important to OEM buying influences than it is to USER buying influences.

Null Hypothesis 6e: There is no significant difference between OEM and USER criteria importance ratings for the magnetic starter purchasing criterion "outside panel builder's brand preference."

Ho: $U_{oem} = U_{user}$

Hl: $U_{oem} > U_{user}$

Results: Computed t, 0.72; significance, $\leq$.472; n = 182.

The data does not support the rejection of null hypothesis 6e. Null hypothesis 6e is retained.

Four of the five hypothesized magnetic starter purchasing criteria were found to differ significantly in the hypothesized direction. The fifth criterion differed in the predicted direction but this difference was too small to be judged significant.

Non-hypothesized OEM-USER criteria importance differences are compared with hypothesized criterion differences in Table 12 where all fourteen magnetic starter purchasing criteria are ranked by the size of the difference between mean ($\bar{X}$) OEM-USER criteria importance differences. Table 12 indicates that no non-hypothesized criteria importance differences are considered significant (.01).

TABLE 12

ANALYSIS OF DIFFERENCES BETWEEN OEM AND USER AVERAGE MAGNETIC STARTER CRITERIA IMPORTANCE

Magnetic Starter Purchasing Criterion	OEM			USER			Mean Difference (OEM-USER)	t Value	Sig.[1] (≤)
	Mean	S.D.	N	Mean	S.D.	N			
Maintenance	3.52	1.04	81	4.47	0.68	103	-.95	7.09	.001*
User specifications	2.61	1.18	80	1.87	1.01	103	+.74	4.49	.001*
Eng. time and effort	3.65	0.95	81	3.04	1.09	103	+.61	4.08	.000*
Nat'l. distributor	3.43	1.14	81	2.84	1.36	102	+.59	3.18	.002*
Starter size	3.53	1.06	81	3.32	1.21	103	+.21	1.25	.212
Local distributor	4.00	1.08	81	4.20	1.00	103	-.20	1.31	.193
Priced lower	2.85	1.20	81	2.66	1.09	103	+.19	1.12	.263
Perf. reliability	4.35	0.84	81	4.56	0.68	103	-.19	1.89	.060
Past experience	4.28	0.79	81	4.47	0.65	101	-.19	1.67	.098
Panel bld's. pref.	2.03	1.15	80	1.90	1.14	102	+.13	0.72	.472*
Installation/modif.	3.78	0.88	81	3.91	0.81	103	+.13	1.07	.286
Catalog	3.68	1.07	81	3.58	1.08	103	+.10	0.60	.546
Manufacturer's Rep.	2.67	1.26	81	2.58	1.15	103	+.09	0.47	.640
Inf./tech. help	3.79	1.01	81	3.73	1.06	103	+.06	0.40	.686

[1]Significance value, two tailed test
[2]Hypothesized to differ significantly, .01

Results Summary

This section summarizes the analysis of criteria importance ratings between OEM and USER buying influences.

Rank Order Analysis

Analysis of average OEM and USER criterion importance revealed that they were significantly similar for both limit switch criteria ($\leq .02$) and magnetic starter criteria ($\leq .03$). Analysis of rank order differences revealed that a higher proportion of these differences were associated with hypothesized criteria than with non-hypothesized criteria. The average rank order difference for limit switch and magnetic starter hypothesized criteria were 2.33 and 2.00, respectively. The average rank order differences for limit switch and magnetic starter non-hypothesized criteria were only 1.27 and 0.44, respectively.

All six hypothesized limit switch criteria were associated with rank order differences in the direction predicted, with the largest difference being associated with "ease of maintenance and repair," ranked eight by USER's and thirteen by OEM's.

Three of the five magnetic starter hypothesized criteria were associated with rank order differences in the predicted direction with the largest difference being associated with "ease of maintenance and repair," ranked three by USER's and nine by OEM's. One hypothesized magnetic starter criterion was ranked equally by OEM and USER buying influences but still demonstrated a significant magnitude difference in the predicted direction. One additional hypothesized criterion was associated with a rank order difference of "one" but differed in the non-predicted direction. In general, however, the

direction of rank order differences for hypothesized criteria were in the predicted direction.

Analysis of Magnitude Differences

Analysis of criteria importance ratings using MANOVA revealed overall significant differences for limit switch criteria ratings (.001) and magnetic starter criteria ratings (.0001). Analysis of criteria importance differences for individual limit switch criteria revealed all six hypothesized criteria differed significantly (.001) in the hypothesized direction. Of the eleven non-hypothesized limit switch criteria, only one was considered significantly different between OEM's and USER's. Analysis of criteria importance differences for individual magnetic starter criteria revealed that four of the five hypothesized criteria differed significantly (.002) and that none of the nine non-hypothesized criteria were considered significantly different (.01).

In summary, it is concluded that the OEM and USER buying influences have similar overall criteria importance rank order hierarchies but that they place significantly different importance on certain specific criteria. It is further concluded that these specific differences are not due to chance sampling fluctuations since nine of the ten criteria found to significantly differ were predicted a priori on the basis of different problems facing each group. The theoretical and practical significance of these findings are discussed in the following chapter.

CHAPTER V

DISCUSSION

The discussion of research results has been divided into the following four sections: 1) implications for organizational buying theory, 2) implications for marketing practice, 3) research limitations, and 4) implications for future research.

Implications for Organizational Buying Theory

Current models of organizational buyer behavior (Robinson, Faris, and Wind, 1967; Sheth, 1973; Webster and Wind, 1972) hypothesize purchasing criteria differences across organizational buying influences but do not hypothesize the precise nature of these "differences." The empirical results of this study support these hypotheses and also provide additional insight into the nature of these criteria differences.

Results of this study indicate more similarities than differences in the relative importance of purchasing criteria across organizational buying influences. The criterion importance hierarchy, as estimated by average criterion importance rank order, were found to be significantly similar across the two buying influence categories examined in this study. Further, examination of individual criterion importance ratings revealed that the two groups did not significantly differ on ten of seventeen limit switch purchasing criteria or ten of fourteen magnetic starter purchasing criteria.

Significant criteria importance differences were found, however, on seven limit switch purchasing criteria and four magnetic starter purchasing criteria. It can be concluded that the buying influences examined in this study place similar importance upon the majority of purchasing criteria yet significantly differed on selected criteria. Replication will be required to determine if this conclusion is valid for buying influences in different industries and purchasing situations.

This conclusion is similar to Haley's (1968) findings in consumer market segmentation studies. He suggests that consumer segments seek as many brand benefits as possible, rather than one segment seeking one particular benefit and another segment seeking a quite different benefit (Haley, 1968, p. 32). He suggests that segments differ in the relative importance placed upon individual benefits rather than a totally different benefit configuration.

Since the purchasing criteria used in this study were stated in terms of positive brand benefits sought by organizational buying influences, it can be concluded that the two buying influence categories examined seek similar benefit configurations but differ significantly in the relative importance placed upon specific benefits or criteria.

The results of this study also specifically support the theoretical contention that purchasing criterion differences across organizational buying influences may be caused by differences in the product related problems faced by each buying influence. The significant criteria importance differences found in this study were largely predicted on the basis of different product related problems facing each

buying influence category.

Finally, the two categories of primary brand buying influences found in this study resided in two separate organizations: 1) organization manufacturing conveying equipment and 2) organization purchasing and using conveying equipment. This provides clear evidence of interorganizational brand buying influences for component parts purchased by original equipment manufacturers. Recognition of interorganizational buying influences differs across current models of organizational buyer behavior. Only Robinson, Faris, and Wind's model (1967) recognizes that a manufacturer's purchases may be directly influenced by customer component part brand name specifications. Webster and Wind's model (1972) only recognizes indirect customer influence on the salability of a manufacturer's product. Sheth's (1973) model makes no reference to any possible interorganizational brand buying influences. It would appear, therefore, that current models of organizational buyer behavior need to more clearly conceptualize the role of interorganizational buying influences.

In summary, these empirical findings are significant to organizational buying theory in the following four ways: 1) results support the general hypothesis that purchasing criteria may significantly differ across organizational buying influences, 2) findings suggest that organizational buying influences have similar overall criterion importance hierarchies and significantly differ only on the relative importance placed upon certain specific criteria, 3) results indicate that criterion importance differences across organizational buying influences are often associated with different product related problems faced by these buying influences, and 4) results provide clear

evidence of strong interorganizational brand buying influences for component parts.

Implications for Marketing Practice

The rationale underlying the marketing concept is that a firm may increase it's competitive advantage by tayloring it's market offering to better satisfy market needs and wants. The results of this study empirically support the opportunity for tayloring marketing decisions to reflect similarities and differences in purchasing needs across organizational buying influences. Marketing strategy and decisions designed for organizational markets may be taylored to fit buying influences in two distinct ways: 1) marketing decisions such as advertising may be taylored to relevant buying influence categories or segments, and 2) personal selling may be used to taylor brand appeal to buying influences within each prospective organization.

The concept of market segmentation refers to dividing heterogeneous market needs and wants into more homogeneous groups or segments. Frank, Massy, and Wind (1971) have suggested that an organizational market be segmented on the basis of different needs and wants across organizational buying influences. This study supports their suggestions by demonstrating that organizational buying influence categories or segments can be identified in practice and that these segments do differ in the relative importance placed upon certain purchasing criteria. However, it is important to note that similarities in criteria importance were also found across organizational buying influences. Therefore, these results suggest altering the relative promotional emphasis placed upon each criterion rather than using

totally different brand appeals.

For example, this study suggests that different limit switch or magnetic starter advertisements should be designed to better fit the needs of OEM and USER buying influences. OEM advertising should place greater relative emphasis upon a brand's national distribution system or ease of engineering. USER advertising would place greater emphasis upon the brand's ability to withstand rugged applications and hazardous environments or the brand's ease of maintenance and repair. However, both OEM and USER advertising equally stress other brand benefits, such as availability of product information and technical help or performance reliability.

Personal selling at the individual organization level provides the greatest flexibility for matching a brands appeal to buying influences within each prospective organization. Thompson (1973) suggests using the problem solving approach to identify and understand the product related problems faced by each individual buying influence. He suggests tayloring a sales strategy to each buying influence whereby each sales presentation would reflect the problems and needs of individual buying influences.

The results of this study empirically support the need and opportunity for tayloring sales strategy to individual buying influences. This should be emphasized in sales training programs.

The results of this study also indicate that a firm's market gathering information system should focus upon similarities and differences across brand buying influences regarding product related problems faced and brand benefit sought. Sales personnel, for example, could be trained to systematically collect this information. Marketing

management could use this information to segment organizational markets and taylor advertising or other marketing decisions to better fit each buying influence segment.

In summary, the similarities and differences in the relative importance of brand purchasing criteria found to exist in this study have the following implications for marketing practice: 1) organizational buying influences may be used as the basis for further segmenting organizational markets and tayloring a firm's marketing effort to better fit each buying influence category, 2) this study supports the need for personal selling strategy to be taylored to fit the problems and needs of individual buying influences within each prospective organization, and 3) that it may be beneficial for a firm's market information system to provide information regarding the product related problems faced, and brand benefits sought, across organizational buying influences.

Research Limitations

The following limitations were encountered in this research study.

1. Mail questionnaires were not returned by thirty-two percent of contacted OEM buying influences or by thirty five percent of contacted USER buying influences. Therefore, the possibility exists that this data is not representative of the total defined population because of the self-selected sample and a possible non-response bias. However, it appears logical that many non-responses were due to respondents time pressure or lack of interest in the study rather than any factor which would systematically bias criterion importance ratings.

Further, the sixty-eight percent OEM return rate (n = 90) and the sixty-five percent USER return rate (n = 109) represent a high mail questionnaire return rate and a large sample size for organizational buyer research.

2. The preliminary telephone qualifying procedure appeared to be quite successful in locating a major organizational brand buying influence within each organization to complete and return the mail questionnaire. However, there is no guarantee that the most influential brand buying influence was located in each organization. While a more accurate identification would be required for personal selling, this telephone procedure did appear satisfactory for researching the general criterion importance tendencies across OEM and USER buying influence categories.

In general, the limitations described here do not appear to significantly reduce the validity of this study or its implications for marketing theory and practice.

Implications for Future Research

This research represents an initial effort in understanding purchasing criteria similarities and differences across organizational buying influences. The following areas are suggested for future research:

1. These results need to be replicated across different products and markets which involve different categories of organizational buying influences. In particular, the purchasing agent's criteria importance hierarchy needs to be compared and contrasted to other buying influences within the same organization to determine the extent

to which purchasing agents reflect the problems and benefits sought by these other buying influences.

2. This study documented interorganizational brand buying influences for component parts purchased by original equipment manufacturers. Research also needs to be focused upon other possible areas of interorganizational brand buying influences, such as government component specifications or the influence of consulting firms in recommending specific product brands of computer hardware or material handling equipment.

3. Research needs to be focused upon factors useful in identifying buying influences within purchasing organizations. For example, what are the factors that determine the location of primary buying influences across different functional areas and hierarchial levels within the organization? When is purchasing a primary versus a secondary brand buying influence?

4. Research needs to be focused upon the strategies used to resolve differences in criterion importance across organizational buying influences. When is conflict likely to occur and how is it likely to be resolved?

APPENDICES

APPENDIX A

OEM QUESTIONNAIRE

APPENDIX A

OEM QUESTIONNAIRE

5	MOST IMPORTANT	What is the relative importance to you of the limit switch purchasing criteria below?
4		For each of the criteria listed below, please rate the relative importance to <u>you</u> when selecting a manufacturer's brand of limit switch to purchase <u>when your conveyor customer has no brand preference</u>. Each criteria may be important to you but try to rate the <u>relative</u> importance of each criterion when it is <u>compared</u> to the other criteria on the list. Please read the entire list and then use the rating scale to the <u>left</u> to rate the <u>relative</u> importance of each criterion.
3	AVERAGE IMPORTANCE	
2		
1	LEAST IMPORTANT	

RELATIVE IMPORTANCE RATING	LIMIT SWITCH PURCHASING CRITERIA
___	Control catelog easy to use
___	Physical interchangeability with other standard brands
___	Manufacturer offers complete line of switches, actuator arms, and heads
___	Proper pre-travel, over-travel, and actuator reset
___	Withstands rugged applications
___	Withstands environmental hazards
___	Ease of modification and installation
___	Ease of maintenance and repair
___	Requires less engineering time and effort
___	Good <u>local</u> distributor delivery and service
___	Good distributors <u>nationwide</u>
___	Priced lower than competition
___	Brand specified by many conveyor users
___	Information/technical help readily available
___	Regular contacts with Manufacturer's representative
___	Performance reliability over equipment life
___	Satisfactory past experience with brand

5	MOST IMPORTANT	What is the relative importance of the magnetic starter purchasing criteria below?
4		For each of the criteria listed below, please rate the relative importance to you when selecting a manufacturer's brand of magnetic starter to purchase when your conveyor customer has no brand preference. Each criteria may be important to you but try to rate the relative importance of each criteria when it is compared and contrasted to the other criteria on the list. Please read the entire list and then use the rating scale to the left to rate the relative importance of each criteria.
3	AVERAGE IMPORTANCE	
2		
1	LEAST IMPORTANT	

RELATIVE IMPORTANCE RATING	MAGNETIC STARTER PURCHASING CRITERIA
___	Starter size and required panel space
___	Outside panel builder's brand preference
___	Ease of modification and installation
___	Control catalog easy to use
___	Ease of maintenance and repair
___	Requires less engineering time and effort
___	Good local distributor delivery and service
___	Good distributors nationwide
___	Priced lower than competition
___	Brand specified by many conveyor users
___	Information/technical help readily available
___	Regular contacts with manufacturer's representative
___	Performance reliability over equipment life
___	Satisfactory past experience with brand

APPENDIX B

USER QUESTIONNAIRE

APPENDIX B

USER QUESTIONNAIRE

ASSUME YOUR FACILITY IS ORDERING NEW CONVEYING EQUIPMENT REQUIRING LIMIT SWITCHES.

What is the relative importance to you of the limit switch purchasing criteria below.

For each of the criteria listed below, please rate the relative importance to you when selecting a manufacturer's brand of limit switch to specify to the manufacturer of new conveying equipment. Each criterion may be important to you but try to rate the relative importance of each criterion when it is compared and contrasted to the other criteria on the list. Please read the entire list and then use the rating scale on the left to rate the relative importance of each criterion.

5 MOST IMPORTANT
4
3 AVERAGE IMPORTANCE
2
1 LEAST IMPORTANT

RELATIVE IMPORTANCE RATING	LIMIT SWITCH PURCHASING CRITERIA
___	Control catalog easy to use
___	Physical interchangeability with other standard brands
___	Manufacturer offers complete line of switches, actuator arms, and heads
___	Proper pre-travel, over-travel, and actuator reset
___	Withstands rugged applications
___	Withstands environmental hazards
___	Ease of modification and installation
___	Ease of maintenance and repair
___	Requires less engineering time and effort
___	Good local distributor delivery and service
___	Good distributors nationwide
___	Priced lower than competition
___	Brand specified by many conveyor users
___	Information/technical help readily available
___	Regular contacts with Manufacturer's representative
___	Performance reliability over equipment life
___	Satisfactory past experience with brand

BIBLIOGRAPHY

BIBLIOGRAPHY

Alexander, Ralph S., Cross, James S., and Hill, Richard M. Industrial Marketing. (Homewood, Illinois: Richard D. Irwin, Inc.). Third Edition, 1967.

Alpert, Mark I. "Identification of Determinant Attributes: A Comparison of Methods," Journal of Marketing Research, Vol. VIII (May, 1971), pp. 184-191.

Cardozo, R. and Cagley, J. "Experimental Study of Industrial Buyer Behavior," Journal of Marketing Research, Vol. VIII (Aug. 1971), pp. 329-334.

Frank, Ronald E., William F. Massy, and Yoram Wind. Market Segmentation (Englewood Cliffs, N.J.: Prentice-Hall, Inc.), 1971.

Haley, Russell I. "Benefit Segmentation: A Decision-oriented Research Tool," Journal of Marketing, Vol. 32 (July, 1968), pp. 30-35.

Harding, Murray. "Who Really Makes the Purchasing Decision?", Industrial Marketing, September, 1966, pp. 76-81.

Klass, Bertrand. "What Factors Affect Industrial Buying Decisions?", Industrial Marketing, May, 1961, pp. 33-35.

Levitt, T. Industrial Purchasing Behavior: A Study of Communications Effects, Division of Research, Graduate School of Business Administration, Harvard University, 1965.

Lehmann, Donald R. and John O'Shaughnessy. "Difference in Attribute Importance for Different Industrial Products," Journal of Marketing, Vol. 38 (April 1974), pp. 36-42.

McCarthy, E. Jerome. Basic Marketing: A Managerial Approach (Homewood, Illinois: Richard D. Irwin), Fifth Edition, 1975.

Robinson, Patrick J., Charles W. Faris, and Yorman Wind. Industrial Buying and Creative Marketing (Boston: Allyn & Bacon, Inc.), 1967.

Sales Management Magazine (Editors), "Sixty Four Percent of Industrial Calls Are on the Wrong Man," Sales Management Magazine, February 6, 1959, pp. 53-56.

Sheth, Jagdish N. "A Model of Industrial Buyer Behavior," Journal of Marketing, Vol. 37 (October 1973), pp. 50-56.

Scientific American, How Industry Buys/1970, Scientific American, 1969.

Scott, Jerome E. and Peter D. Bennett. "Cognitive Models of Attitude Structure: 'Value Importance' is Important," Proceedings, Fall Conference, American Marketing Association, 1971, pp. 346-350.

Strauss, George. "Tactics of Lateral Relations: The Purchasing Agent," Administrative Science Qaurterly, September, 1962, pp. 161-186.

Strauss, George. "Work-Flow Frictions, Interfunctional Rivalry, and Professionalism: A Case Study of Purchasing Agents," Human Organization, Vol. 33, (September, 1964), pp. 137-149.

Thompson, Joseph W. Selling: A Managerial and Behavioral Science Analysis (New York: McGraw-Hill Book Company), Second Edition, 1973.

Turner, Alan E. "Wanted: More Creative Selling For Products Sold to Industry," Sales Management Magazine, September 15, 1953, pp. 40-43.

Webster, Frederick E., Jr. "Industrial Buying Behavior: A State-of-the art Appraisal," in Bernard A. Morin (Editor) Marketing in a Changing World, (Chicago: American Marketing Association) June, 1969, pp. 254-260.

Webster, Frederick E. Jr. and Yorman Wind. "General Model for Understanding Organizational Buying Behavior," Journal of Marketing, Vol. 36 (April, 1972), pp. 12-19.

Webster, Frederick E., Jr. and Yorman Wind. Organizational Buying Behavior, (Englewood Cliffs: Prentice Hall), 1972.

Weigand, Robert. "Identifying Industrial Buying Responsibility," Journal of Marketing Research, Vol. III (Feb. 1966), pp. 81-84.

Weigand, Robert. "Why Studying the Purchasing Agent Is Not Enough," Journal of Marketing, Vol. 32 (Jan., 1968), pp. 41-45.