



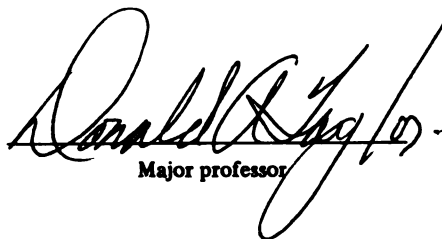


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AN INQUIRY INTO THE DECISION-MAKING PROCESS  
IN THE BUYING BEHAVIOR OF HEALTH  
CARE INSTITUTIONS

By

Joseph Sachs

Submitted to  
Michigan State University  
in partial fulfillment of the requirements  
for the degree of

DOCTOR OF PHILOSOPHY

Department of Marketing and Transportation Administration

1979

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## ABSTRACT

### AN INQUIRY INTO THE DECISION-MAKING PROCESS IN THE BUYING BEHAVIOR OF HEALTH CARE INSTITUTIONS

by

Joseph Sachs

This research investigates the relevance and applicability of variables of behavioral models as they apply to the purchasing process of health care institutions. It is an attempt to provide greater understanding and to create a specific body of knowledge regarding buying behavior in a nonindustrial environment.

The problems addressed by this research were identification of hospital members and their involvement and perceived role in the acquisition of major medical equipment. This entailed the transportation of variables and concepts defined in organizational buying behavior models into the as yet little researched area of health care delivery systems. This environment was selected because of its importance in the economy.

A two-phase approach was used. In the first, exploratory data were collected to determine the boundaries and dimensions used by hospitals in the purchase of medical equipment. The second, or validation phase, tested several hypotheses dealing with the role of hospital members in the final purchase outcome.

Joseph Sachs

A questionnaire was sent to the total Michigan population of hospital administrators, who were perceived as being the main figures involved in all phases of equipment purchase. No effort was made to identify respondents. After a follow-up mailing was sent, the response rate obtained was 59 percent. The frequency distribution of respondents and the population was significant at the .001 level.

The findings indicate that there is a strong association between the number of members involved in the purchasing decision process and the length of time needed for that process. Also, there is a lack of association between the number of products available and the length of the process, and there is a lack of association between hospital size and the length of the process. Further findings indicate that membership and members' roles within the buying center differ in each purchasing instance, as well as within each of the identified buying stages for the purchase of medical equipment. Physicians, administrators, and department heads were found to be the members most often involved in the decision-making process. Hospital purchasing agents do not appear to have the same working affinity and involvement as their counterparts in the manufacturing sector.

To my twin daughters  
Alessandra and Priscilla  
who have as yet not had  
anything dedicated to them



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## CHAPTER I

### PROBLEM DEFINITION AND RESEARCH OVERVIEW

#### Introduction

The major thrust of this research is to investigate the relevance and applicability of the industrial buying behavior theory, in general, and the buying center concept, in particular, in terms of the purchasing process of health care institutions. The subject cuts across the areas of marketing management, purchasing management, and hospital administration.

From a marketing viewpoint, the problem resides in better understanding nonindustrial buying behavior so as to determine how the buying process operates. Once this is established, the next step involves meeting and satisfying the needs of buyers. This problem is more complex than might first appear due to the fact that more than one individual participates in the buying decision in organizations. Each one generally has a different perspective of the purchased good or service.

The marketer's interest lies in defining the individual participants, determining the dominant needs of the buying group, and understanding the process by which the final resolution of conflicting demands is achieved.



From a purchasing management viewpoint, the problem lies in analyzing nonindustrial buying behavior so as to achieve a deeper knowledge of the different roles and relationships of the individuals involved in a buying decision. This permits an evaluation of the issues and an understanding of the motives and actions of the suppliers.

From the hospital management perspective, understanding buying behavior and the manner in which the decision-making process evolves is critical for two reasons. On the one hand, hospital managers are confronted by a myriad of legislative actions, such as the Professional Standards Review Organizations and the Health Systems Agency, most of it aimed at curtailing health care costs. On the other hand, these managers must deal with the conflicting consumer expectations of improved health care, through expanded services and equipment, and cost containment.

The marketing and purchasing literature acknowledges the involvement of the purchasing agent, in some capacity, in all the purchasing decisions of an organization. "He may be aided, guided, advised, consulted, directed, overseen, governed but throughout he is involved."<sup>1</sup> Although it is recognized that these agents are seldom solely responsible for purchasing decisions,<sup>2</sup> few studies have tried to pinpoint exactly where that responsibility lies

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<sup>1</sup>Charles D. Kellog, "The Human Element in Industrial Technical Purchasing," IMRA Journal, May 1970, pp. 76-85.

<sup>2</sup>Robert E. Weigand, "Why Studying the Purchasing Agent is Not Enough," Journal of Marketing, Vol. 32 (January 1968), pp. 41-45.

among the different members of an organization or to assess their influence on the final purchase. Among these studies which have been done, the vast majority focus on the manufacturing setting. For some reason, the nonindustrial sector has received virtually no attention, despite the fact that some of these sectors employ more people, generate more revenue and income, and above all buy more goods than many industrial subsectors combined.

The purpose of this research will be twofold. First, it will focus on obtaining a more detailed knowledge of the current purchasing practices of health care institutions regarding major medical equipment. Second, it will attempt to transpose into the nonindustrial sector some of the concepts which have been investigated in an industrial setting.

It is hoped that this study will avoid the shortcomings that Webster claims characterize most industrial buying behavior research: (1) the inability to replicate such studies because of the data collection instrument (that is, unstructured interviews which lead to subjective interpretations); (2) the lack of clearly stated hypotheses and measurements for accepting or rejecting them; and (3) the lack of integration with the main framework of existing theory or other studies.<sup>3</sup>

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<sup>3</sup>F. E. Webster, "Industrial Buying Behavior: A State of the Art Appraisal," in Marketing in a Changing World, 1969. Edited by B. A. Morin. Proceedings of the American Marketing Association (Chicago: American Marketing Association, 1969), pp. 254-260.

### Problem Background

More than a dozen years have passed since Robinson, Faris, and Wind introduced the concept of a buying center.<sup>4</sup> This is a formal or informal unit composed of members who assume different roles and who participate to a greater or lesser extent in an organization's purchasing related decisions. The concept is crucial to understanding the industrial buying behavior process.

Industrial buying behavior has been defined as "the decision making process by which formal organizations establish the need for purchased products and services and identify, evaluate and choose among alternative brands and suppliers."<sup>5</sup> It is interesting to note that the terms industrial and organizational are used interchangeably by most authors. For the purposes of convenience and ease of interpretation, this research will use industrial to refer to a manufacturing setting and organizational to refer to a broader concept that also encompasses institutional and service sectors.

The buying center has been defined as "members of the organization who interact during the buying decision process."<sup>6</sup> Despite the intuitive appeal of this idea and its seeming ability to describe the realities of organizational decision making, very little

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<sup>4</sup>Patrick Robinson; Charles W. Farris; and Yoram Wind, Industrial Buying and Creative Marketing (Boston: Allyn and Bacon, Inc., 1967), p. 101.

<sup>5</sup>Yoram Wind, and Frederick E. Webster, "Industrial Organization Behavior: A Guideline for Research Strategy," Journal of Purchasing, Vol. 8, No. 3 (August 1972), p. 6.

<sup>6</sup>Ibid., p. 77.

empirical research has been done to validate and expand the concept in an industrial setting, much less in the nonindustrial sector. For example, what does the word interact mean in this context? Does one interpret as interaction the casual complaint of an organization member (but someone who has nothing to do with the purchasing process) regarding an item acquired for personal use, made by the same manufacturer his firm is considering as supplier? Despite such problems of meaning, the buying center concept has been widely embraced, at least in principle.

Perhaps the major influence of this concept has been to suggest a shift in focus from the purchasing agent alone to the other individuals involved. In other words, the purchasing agent is not the sole determining factor in the purchasing process.

In a recent article, Wind attributes the lack of buying center studies to two factors:

1. definition shortcomings due to the original definition.
2. methodological difficulties in identifying the members of a buying center and assessing their roles and influences.<sup>7</sup>

Zaltman and Bonama, apparently speaking for participants in a workshop on organizational buying behavior, conclude that

Considerable research is needed to evaluate a number of key issues involved in the idea of a buying center . . . the research necessary . . . has not been conducted to date, rendering the concept of the buying center much less useful as a hypothetical construct. In short, we do not

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<sup>7</sup>Yoram Wind, "Organizational Buying Center: A Research Agenda," in Organizational Buying Behavior, edited by T. V. Bonoma and G. Zaltman. AMA Proceedings Series, 1978, p. 68.

know at this time how buying centers are composed, who tends to participate in them, nor how decisions are made by the participating individuals. Though the concept of the buying center is a necessary and extremely fruitful innovation, it is nonetheless one that needs to be moved from its purely theoretical status to one which can be actively utilized by the management scientist and the practicing manager alike.<sup>8</sup>

On the one hand, we have a concept which is theoretically very relevant and substantively innovative. No one can deny that the buying center is a dynamic approach to depicting the realities of organizational purchasing behavior; its wide acceptance by marketing and purchasing textbooks attests to this.<sup>9</sup> On the other hand, data about buying centers are limited, and there is no empirical support as to its usefulness to and validity for practitioners.<sup>10</sup>

In short, a limited number of surveys have shown and several researchers have conceded that studying the purchasing department along is in sufficient in trying to understand industrial buying behavior.<sup>11</sup> Furthermore, buying behaviorists have tried to theorize

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<sup>8</sup>Thomas V. Bonoma, and Gerald Zaltman, eds., Organizational Buying Behavior, pp. 11-12.

<sup>9</sup>Roy Hill; R. S. Alexander; and J. S. Cross, Industrial Marketing, 4th ed. (Homewood, Ill.: Richard D. Irwin, 1975).

<sup>10</sup>Bonoma and Zaltman, p. 16.

<sup>11</sup>Scientific American, How Industry Buys--1970 (New York: Scientific American, Inc., 1969); H. Buchner, How British Industry Buys (London: Hutchinson and Co., Ltd., 1967); M. Harding, "Who Really Makes the Purchase Decision," Industrial Marketing, Vol. 51 (September 1966), pp. 76-81; Charles E. Walsh, "Reaching Those 'hidden buying influences,'" Industrial Marketing, Vol. 46 (1961), pp. 165-168; and Robert E. Weigand, "Identifying Industrial Buying Responsibility," Journal of Marketing Research, Vol. 3 (February 1966), pp. 81-84.

about where influence lies,<sup>12</sup> and textbooks concede that several influences are involved. What seems to be lacking is the empirical study of actual buying behavior within the framework of one of the existing descriptive models of organizational purchasing behavior. "The overall impression is that the various pieces of research are scattered with few (if any?) attempts to further generalizations and theory building."<sup>13</sup> There is some consensus among academicians that "empirical tests for the elements of grand models that now exist" for industrial buying behavior are needed.<sup>14</sup>

The few studies that have tried to cope with the complexities of trying to operationalize, hypothesize, test, and measure the purchasing process of organizations have dealt only with manufacturing industries. Little effort has been made to test whatever knowledge exists in a nonmanufacturing environment. Despite the importance of and need for work focusing on the manufacturing sector, researchers also should survey other organizational settings so as

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<sup>12</sup>F. E. Webster, and Yoram Wind, Organizational Buying Behavior (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1972); Robinson et al.; and Jagdish N. Sheth, "A Model of Industrial Buying Behavior," Journal of Marketing, Vol. 37 (October 1973), pp. 50-56.

<sup>13</sup>Kjell Grønhaug, "Participation in Organizational Buying: Some Conceptual and Methodological Problems," in Advances in Consumer Research, edited by Keith Hunt, Vol. V (Proceedings of the 8th Annual Conference of the Association for Consumer Research), p. 635.

<sup>14</sup>David T. Wilson, "Models of Organization Buying Behavior: Some Observations," in Buyer/Consumer Information Processing, edited by David Hughes and Ray Michael (Chapel Hill: The University of North Carolina Press, 1974), p. 138.

allow for cross-validation of results from different environments. The result could only be strengthening and improvement of the theoretical framework.

### Problem Statement

This research will deal with two sets of problems. The first involves the buying processes and patterns of the nonmanufacturing sectors of the economy. The focus will be on one of the most dominant of these sectors, health care institutions. The second, closely related to the first, concerns the decision-making process characterizing such purchases. An attempt will be made to reduce the buying center concept to a few basic elements in an effort to operationalize the concept. At the same time, it is hoped, a better understanding will be provided of the effect of group structure on the decision-making process as it relates to the purchasing of medical equipment by health care institutions.

The buying center concept and the different roles of individuals will be analyzed within the theoretical framework of existing buying behavior models. A detailed discussion of these will be reviewed in Chapter II.

The overall objectives addressed in this research may be stated as follows:

1. What is the evolution of the purchasing process in nonmanufacturing institutions?
2. What is the nature of buying centers in nonmanufacturing industries? Is the simple transposition of the roles designated in the standard definition of a buying center valid and sufficient?

3. Who are the various identifiable members involved in the purchasing process in the health care delivery sector?

Related to these general issues are several specific research questions which will be asked.

1. Is there a relationship in institutions between the number of participants in the purchasing decision, the number of alternative products, and/or the size of the organization in terms of the time needed for the final decision to purchase?

2. How important is each designated role in the buying center as it relates to each stage of the buying process?

3. Are all five roles (influencer, decider, gatekeeper, buyer and user) necessary to the buying center as it applies to nonindustrial institutions? Or are some of the roles nonexistent and nonidentifiable?

4. Can such roles be identified in different product classes of purchases?

5. What is the ranking of importance as to the different criteria used in making the final decision?

6. How do the designated roles rank in importance in contributing the final purchasing decision?

7. Can each designated role of the buying center be related to individual members of the organization, or are the roles redundant?



### Research Hypotheses

From the problems outlined above, several hypotheses were developed.

- H<sub>1</sub>: The more members involved in the decision process, the longer it will take to reach the decision.
- H<sub>2</sub>: The larger the number of alternative products considered, the longer it will take to reach the decision.
- H<sub>3</sub>: The larger the organization, the longer it will take to reach the decision.
- H<sub>4</sub>: Participants do not perceive the existence of five roles in the buying center.
- H<sub>5</sub>: The buying center's membership composition will differ for different types of purchases.
- H<sub>6</sub>: The role assigned to themselves by participants will be the role they perceive as being most important.
- H<sub>7</sub>: The buying center's membership composition will differ through each stage of the buying process.
- H<sub>8</sub>: Participants will view their role as constant in each stage.
- H<sub>9</sub>: Participants will perceive differential importance in each role.

The specific dimensions regarding these hypotheses are discussed in detail in the methodology section of Chapter III.

As this research is also exploratory in nature, a descriptive assessment of further relevant findings which have a bearing on the subject will be given in Chapter IV.

### Research Setting

It is appropriate at this time to review the reasons for choosing the health care environment as the object of research.

First, a review of the literature (discussed in greater detail in Chapter II) reveals that studies of organizational buying behavior have focused almost exclusively on manufacturing industries, although the theoretical models claim applicability to other types of organizations (such as governmental agencies, hospitals, educational institutions, and political organizations).<sup>15</sup>

Second, the health care industry is of vital importance, and it is an acknowledged fact that basic information regarding hospital management is lacking.<sup>16</sup>

Third, health costs in 1978 represented almost 9 percent of the GNP; at current rates of growth the figure could approach 10 percent by 1983. Of the total, hospitals and nursing home care represent a large 47.5 percent.<sup>17</sup> It is estimated that nineteen cents of every dollar of hospital expense flows directly through the hospital purchasing department.<sup>18</sup> Hospital expenses totaled

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<sup>15</sup>Webster and Wind, p. 1.

<sup>16</sup>John R. McGibony, "Principles of Hospital Administration," 2nd ed. (New York: G. P. Putnam's and Sons, 1967), p. 562.

<sup>17</sup>"Unhealthy Costs of Health," Business Week, September 4, 1978, p. 59.

<sup>18</sup>Allan Y. Davis, "Gearing Up for Changes," Hospitals, Vol. 45 (October 16, 1971), p. 91.

\$63 billion in 1977,<sup>19</sup> which means that almost \$12 billion was handled by those departments. The sheer magnitude of such numbers warrants an attempt at a better understanding of what is involved.

Fourth, a major portion of the cost increases, compared to 25 years ago, is attributed to the greatly increased sophistication of services due to the explosion in diagnostic, surgical, and therapeutic technology.<sup>20</sup> Typical hospital equipment could include a \$400,000 radiation therapy unit, a \$250,000 continuous-flow blood analyzer, a \$75,000 gamma camera and computer, a \$200,000 ultrasound scanner, a \$350,000 radionuclear scanner, and a computed tomography scanner priced from \$500,000 to \$700,000.<sup>21</sup>

Fifth, in 1977 there were 7,099 hospitals in the United States.<sup>22</sup> If they must make investments of this magnitude to keep abreast of even part of the technological developments, it becomes imperative to know how such purchasing decisions are made.

Sixth, doctors demand that hospitals be thoroughly equipped. They seek to avoid malpractice suits by ordering every conceivable type of test or therapy for their patients. Many hospitals have far more facilities than they need.<sup>23</sup>

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<sup>19</sup>Guide to the Health Care Field, 1978 Edition (Chicago: American Hospital Association), p. A-7.

<sup>20</sup>Business Week, p. 58.

<sup>21</sup>Ibid., p. 58.

<sup>22</sup>Guide to the Health Care Field, p. A-7.

<sup>23</sup>Business Week, p. 58.

Doctors will buy anything, all sorts of new gadgets, and never care how much it costs. Once they were all excited about those glass books for simulating circulation. We bought them, and I'll bet you can still find a few around the hospital, but they were never once used to my knowledge.<sup>24</sup>

This marked dichotomy in purchasing objectives is an interesting problem which seldom, if ever, arises in a manufacturing environment.

Finally, the "marketing concept" within the health care field has apparently been neglected by academics. Before the concept can be implemented, it is essential to understand the buyers, the buying process, and the environment. Careful examination of the managerial aspects of the health care delivery system should pinpoint areas in need of improvement and, ultimately, increase the productivity of both "sellers" and "buyers."

#### Limitations of the Research

The use of specific situations to test general hypotheses usually involves certain restrictions and limitations. This research is no exception. The major limitation is that respondents to the questionnaire came from only one source. Respondents gave subjective answers concerning the situation posed as they perceive it. The research design does not allow cross-verification of answers or the expression of differences in perception by other sources within the organization.

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<sup>24</sup>Quoted in Temple Burlington; Edith M. Leutz; and R. N. Wilson, The Give and Take in Hospitals (New York: G. P. Putnam's Sons, 1956), p. 47.

Second, the units of medical equipment studied here undoubtedly are not the same type (in the sense of fulfilling the same need) in the hospital surveyed. This might lead to some research bias in the sense that respondents were assessing some equipment on the basis of characteristics unique to that acquisition. The only common factors are the monetary value and that it fulfills a medical need.

Third, the results of the study cannot be projected outside the environment (health care facilities) in which it was conducted. Application to other nonmanufacturing firms will only prove valid if this study is replicated in those environments.

Fourth, the research was conducted in a specific geographic area. Although the researcher is unaware of possible biases resulting from this fact, generalization to the national population must be undertaken with caution.

#### Anticipated Significance of Research Findings

It is hoped that this research will contribute to marketing, procurement, and hospital management theory, practice, and education.

From the theoretical aspect of both marketing and procurement management, a detailed understanding would provide insights into the functioning of organizational buying behavior and would permit generalizations to be made. This effort to describe the interrelationships of the purchasing process should promote acceptance and understanding of some of the concepts involved.

From a practitioners standpoint, a detailed understanding of the purchasing behavior of institutions could lead to the development of cost-effective strategies and should contribute to increased productivity of marketing and purchasing.

For hospital management, insights into purchasing patterns might point to improvements in the buying system and provide much-needed cost saving measures.

Furthermore, given the values involved, it would appear only appropriate to fine-tuning on exactly how purchasing decisions are made in the nonmanufacturing entities.

Empirical verification of some of the propositions offered here should enhance the viability of the buying center concept, so central to the descriptive models of organizational buying behavior. A lack of support might very well justify a critical reanalysis of the models as they apply to the nonmanufacturing sectors.

### Organizational Overview of the Research

The study is divided into five chapters. Chapter II describes and discusses in detail the existing behavioral models of organizational buying behavior which form the basis of this investigation. It reviews the contributions of the relevant marketing and purchasing literature. Also discussed are certain aspects of health care institutions that are important to an understanding of the environment.

Chapter III explains the research methodology in detail. The research propositions and hypotheses are discussed and

the data collection instrument as well as the statistical analyses used are outlined.

Chapter IV presents the results of testing the research hypotheses.

Chapter V offers a summary and conclusion and explores the contributions of the findings and their implications. Limitations of the study, as well as suggestions for further research are also discussed.

## CHAPTER II

### THEORETICAL FRAMEWORK AND LITERATURE REVIEW

#### Introduction

This chapter discusses the theoretical basis upon which this research is founded and the relevant literature. The discussion is organized along the following lines: first, the role of models in the social sciences; second, the major models that have contributed to increased understanding of organizational purchasing behavior; third, the empirical work pertinent to this research; finally, to provide background material, the environmental and organizational factors surrounding the health care service system.

#### The Role of Models in the Behavioral Sciences

Models exist in all scientific fields, be they social or physical. In the behavioral sciences, a basic purpose of models is to abstract specific functions from the environment being scrutinized and depict how they are related. These functions are usually referred to as components or variables. A model will be only as good as the conceptual scheme upon which it is based.<sup>1</sup> Once this scheme is selected, supported by existing information or assumptions regarding certain relationships, a technique or means of

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<sup>1</sup>Paul H. Rigby, Conceptual Foundations of Business Research, (New York: John Wiley and Sons, 1965), pp. 109-127.



representation must be selected or developed to represent the variables. Usually, the model also discusses the possible relationships prevailing between or among these variables. Some models are fairly simple to understand and to test. Others are more complex and are difficult to understand or measure.

The main reason for constructing a model is to enable one to measure the relationships of the variables depicted by it.<sup>2</sup> The purpose of models is to aid in either description or decision making.

Specific and general models abound in the behavioral sciences. Some are internally consistent sets of statements concerning marketing elements.<sup>3</sup> Others are critical to an understanding of the general theories underlying the subject studied. Still others are "models" in the very loose sense of the word, that is, any scientific theory which is couched in a symbolic style.<sup>4</sup>

Organizational buying models fall into two broad classifications. The first type is descriptive. These seek to understand phenomena by trying to explain things as they exist.<sup>5</sup> This kind of model is of immense use in the early stages of development of a

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<sup>2</sup>Ibid.

<sup>3</sup>William Lazer, "The Role of Models in Marketing," Journal of Marketing, Vol. 26, No. 2 (April 1962), pp. 9-14.

<sup>4</sup>Abraham Kaplan, The Conduct of Inquiry (San Francisco: Chandler Publishing Co., 1964), p. 263.

<sup>5</sup>Keith K. Cox, and Ben M. Enis, The Marketing Research Process (California: Goodyear Publishing Co., 1972), p. 37.

discipline.<sup>6</sup> The second type attempts to specify certain relationships and are termed behavioral models.<sup>7</sup>

The existing models of organizational buying behavior provide only a rough framework for analysis. Specific information must be gathered for particular buying situations or market segments in order to assess the validity of the suggested variables and relationships. This testing begins with the generation of hypotheses.<sup>8</sup>

It is interesting to note that the terms model and theory are often used interchangeably. Some authors object to this usage. To them, a theory is more or less abstract, in the sense that it neglects variables; it describes certain "ideal" entities which exist only in the context of the theory (for example, the theory of evolution). "In a strict sense, not all theories are in fact models; in general we learn something about the subject-matter from the theory, but not by investigating properties of the theory."<sup>9</sup> The controversy is beyond the scope of this research and so will not be

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<sup>6</sup>Peter D. Bennet, "Theory Development in Consumer Buying Behavior," in Consumer and Industrial Behavior, edited by Arch Woodside, Jagdish N. Sheth and Peter D. Bennet (New York: Elsevier North-Holland, Inc., 1977), p. 13.

<sup>7</sup>Robert D. Buzzel, Mathematical Models and Marketing Management (Boston: Harvard Business School Division of Research, 1964), p. 205.

<sup>8</sup>Yoram Wind and Frederick E. Webster, "Industrial Buying as Organizational Behavior: A Guideline for Research Strategy," Journal of Purchasing, Vol. 8, No. 3 (August 1972), p. 12.

<sup>9</sup>Kaplan, p. 264.

discussed here.<sup>10</sup> Suffice it to say that, in this dissertation, the main role of models or theory of organizational buying behavior is perceived as providing a useful frame of reference for depicting the organizational environment by stimulating the generation of hypotheses. These, in turn, lend themselves to testing and, as a result, contribute to the advancement of knowledge.

### Models of Organizational Buying Behavior

Perhaps the most influential source of models of buying behavior is the work of Cyert and March. Their book, A Behavioral Theory of the Firm, is considered the most significant study of the organizational decision process to date.<sup>11</sup> Cyert and March recognized the influence and interaction of various components in decision making. They suggested four relational concepts that are the core of the behavioral theory of this process: (1) uncertainty avoidance, (2) problemistic search, (3) organizational learning, and (4) quasi-resolution of conflict.<sup>12</sup>

Based on these concepts of decision making in general, Webster<sup>13</sup> made one of the earliest attempts to model the industrial buying process. His model suggests the possible influences of

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<sup>10</sup>For an interesting discussion see Shelby D. Hunt, Marketing Theory: Conceptual Foundations of Research in Marketing (Columbus, Ohio: Grid, Inc., 1976).

<sup>11</sup>Richard Cyert, and James March, A Behavioral Theory of the Firm (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1963).

<sup>12</sup>Ibid., pp. 116-127.

<sup>13</sup>Frederick E. Webster, "Modeling the Industrial Buying Process," Journal of Marketing Research, Vol. 2, No. 4 (November 1965), pp. 370-376.

organizational variables upon the final purchasing outcome:

(1) problem recognition, (2) buying responsibility, (3) the search process, and (4) the choice process.

Following this pioneering effort, Robinson, Farris, and Wind undertook a major in-depth study of purchasing within three large manufacturing organizations.<sup>14</sup> Building upon the work of Cyert and March, they conceptualized that the general propositions presented by those authors regarding business organizations was also valid for one of the units of the organization.<sup>15</sup> This unit, which was involved in the purchasing process, they termed the "buying center."<sup>16</sup>

Robinson, Farris, and Wind suggested that the buying influences within an organization are composed of different actors, each with a unique role. Each actor perceives purchasing problems and solutions from his own perspective. These actors who compose the buying center fall into two major groups--the buyers and the users.<sup>17</sup>

They visualized the possibility of contact of these two groups with other members of the organization. However, they stopped short of defining who those other actors could be and how

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<sup>14</sup>Patrick Robinson, Charles Farris, and Yoram Wind, Industrial Buying and Creative Marketing (Boston: Allyn and Bacon, Inc, 1967).

<sup>15</sup>Ibid., p. 109.

<sup>16</sup>Ibid., p. 102.

<sup>17</sup>Ibid., p. 161.

such contacts could influence, in a positive or negative way, the outcome of the purchasing decisions.

Another major contribution to the understanding of industrial buying decisions by these three authors was their concept of the different stages in a buying process.<sup>18</sup> These phases were:

1. Anticipation or recognition of a problem (need) and a general solution.
2. Determination of characteristics and quantity of needed items.
3. Description of characteristics and quantity of needed items.
4. Search for the qualification of potential sources.
5. Acquisition and analysis of proposals.
6. Evaluation of proposals and selection of suppliers.
7. Selection of an order routine.
8. Performance feedback and evaluation.

Robinson and his colleagues recognized that some of the buy phases could be totally dependent on the nature of the purchase. To these buying phases or stages they added the idea of the novelty of the purchase. They coined the term buy classes<sup>19</sup> and divided these types of purchase into three situations: (1) new task, (2) modified rebuy, and (3) straight rebuy. This classification matrix of the buying process they called the buy grid: in the rows are the buy phases, and in the columns are the buy classes. The buy phase

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<sup>18</sup>Ibid., p. 14.

<sup>19</sup>Ibid.

classification is a milestone in the understanding of buying behavior and has been widely recognized as such. However, the buy class classification has come under some scrutiny.

Lehmann and O'Straghnessy have argued that "if products could be classified on the basis of problems inherent in their adoption, such a classification might be both predictive of weightings of the relative importance of product/supplier attributes, and predictive of buyers' preferences with regard to suppliers."<sup>20</sup> They suggest the following buy classes: (1) routine-order products, (2) procedural-problem products, (3) performance-problem products, and (4) political-problem products. Perhaps, because of its broader implications, this classification has not received much support among scholars, who continue to refer to the original buy classes proposed by Robinson and his colleagues.

As an outgrowth of both the aforementioned works, Webster and Wind developed what can be considered the most comprehensive model to date of organizational buying behavior.<sup>21</sup> They claim that their model has broad applicability--not only to industrial manufacturing organizations, but also to all types of profit and non-profit organizations. The model consists of four major divisions which account for all the possible factors that might affect the

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<sup>20</sup>Donald R. Lehmann, and John O'Shaughnessy, "Difference in Attribute Importance for Different Industrial Products," Journal of Marketing, Vol. 38 (April 1974), pp. 36-42.

<sup>21</sup>Webster and Wind.

purchasing decision: environmental, organizational, interpersonal, and individual influences.

At the core of the organizational and interpersonal influences is the buying group or the buying center. This consists of members (actors) who fall into one of the following classifications:<sup>22</sup>

(1) users are those members who actually use the product or service; (2) buyers are those who have a formal authority granted by the organization and formal responsibility for contracting the service; (3) influencers are those in the organization who directly or indirectly influence buying or usage decisions; (4) deciders are those who have either formal or informal power to determine the final purchase outcome; and (5) gatekeepers are those who control the flow of information into the organization and ultimately into the buying center.

Each of these buying roles may be played by more than one organizational member, and members may play two or more roles simultaneously. Webster and Wind define the buying center as consisting of all those who interact for the specific purpose of accomplishing the buying task.<sup>23</sup> They do not attempt to measure or describe what degree of interaction qualifies one for membership in the buying center.

Webster and Wind hypothesize that these buying influences, or the members of the buying center, use different criteria to evaluate

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<sup>22</sup>Ibid., p. 35.

<sup>23</sup>Ibid.

buying actions. The nature of these hypothesized differences are, similar to the Robinson et al. model, only elaborated through examples (that is, the marketing, financial, or production view) of how the purchase will affect or contribute to the individual member's performance in the organization, by making it easier or more effective.<sup>24</sup>

Webster and Wind offer the first formal definition of those "perceived members" who influence the purchase decision. Theirs is an attempt to identify every individual in the organization who conceivably might affect a purchasing decision and to attribute to that person a certain role. Included are individuals who are directly involved as well as those who have only a peripheral interest in the outcome.

Perhaps one shortcoming of the Webster-Wind model lies in its effort to encompass every conceivable organization type. In other words, it is so general as to be applicable to all corporate or individual buying processes. Furthermore, it does not attempt to explain the interactions among the different subunits, or members, of the buying center. It is, however, a comprehensive effort that allows, among other things, hypothesis formulation and testing of most of the more than fifty variables presented.

Sheth's model of industrial buying behavior is more specific in that it focuses primarily upon purchasing by industrial manufacturing organizations, although it can be adapted to include other

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<sup>24</sup>Ibid., p. 81.



types by modifying some of the proposed variables. The model does not specifically mention organizational roles in the broad sense; rather, it suggests that there are typically three areas involved in influencing the outcome of a purchase decision in an organization: (1) purchasing, (2) engineering or quality control, and (3) manufacturing, or the user. It may be assumed that Sheth had in mind only those purchases that are directly related to the production process of an industrial firm (such as components and raw materials).<sup>25</sup>

Sheth hypothesizes that two different sets of factors dictate whether the purchase will be made by a single member of the organization or by a group. He recognizes that simply because a purchase is made by one individual, that individual is not necessarily the purchasing agent. The two sets of factors are: (1) product specific factors, including perceived risk, type of purchase, and time pressure; and (2) company specific factors, including company orientation, company size, and degree of centralization.

Sheth's model suggests a more dynamic approach to analyzing buying behavior by introducing the two concepts of time pressure and company size. These variables have been included in the hypotheses formulated in this research to measure their possible relationship to the buying process in health care institutions.

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<sup>25</sup>Jagdish N. Sheth, "A Model of Industrial Buying Behavior," Journal of Marketing, Vol. 37 (October 1973), pp. 50-56.

Recently, Hill and Hillier have developed a partial model related to industrial buying behavior.<sup>26</sup> It specifically concerns the buying center concept. They suggest that the buying center should only be composed of three subunits: the information unit, the decision making unit, and the control unit.<sup>27</sup> The rationale, according to the authors, is that at any time in the buying process it would be possible to allocate the role played by individuals to any one of the three units. Using the analogy of the structure of an atom, they visualize the decision making unit as the nucleus of this atom. In the first, or primary, shell surrounding the nucleus would be the control unit. The second layer, or shell, would be the information unit. The outer shell is composed of members outside the organization (such as consultants, government organizations, suppliers, and customers) who might in some way influence the final decision. Hill and Hillier stop short of identifying the individual organization members in each unit. From their description, it would appear that the nucleus and surrounding shells include different individuals at different times, dictated by the nature of the purchase. In other words, in a straight-rebuy situation, the nucleus is composed of the purchasing agent and the user. In a new-buy situation, the nucleus is made up of "senior management," with surrounding shells being composed of the user and the purchasing agent. In such a situation there would be increasing contact among

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<sup>26</sup>Roy W. Hill and Terry J. Hillier, Organizational Buying Behavior (London: The McMillan Press, Ltd., 1977).

<sup>27</sup>Ibid., pp. 66-69.

the shells and between them and the nucleus, which would be reflected in a high level of activity, creating a more volatile state for the atom as a whole.

Two hypotheses which have a bearing on this research are formulated in the Hill and Hillier model. First, depending on the novelty of the purchase, they maintain there is a direct relationship between the total number of individuals (analogous to electrons) in the outer shells and the number of individuals in the nucleus (the protons). Second, they claim that membership in the buying center changes throughout the buying phases. The present research will try to test these hypotheses.

As can be seen, the aforementioned models are somewhat similar in their descriptions of the decision-making process of organizations. None pinpoints the precise nature of the "informal group" in the buying center. All refer to the differences in specialized job performance, objectives, and products (or brands) as the prime factors underlying each member's perception of what the purchase outcome should be. All suffer from overly generalized causes and effects, and all are of limited use, even in a descriptive form, in understanding institutional purchasing behavior.

Regardless of the number or roles of the members of the buying center, the literature agrees that the decision to purchase a new product or service is almost always the result of interaction between at least two interdependent individuals within the same organization. Homans postulates that members of any group can

usually be differentiated in terms of rank, by which he means the position of a member in the group.<sup>28</sup> In operational terms, it would appear feasible for one member of the group to be able to pinpoint the importance of each of the other members in the final decision. In other words, since members probably can rank each other, it should be possible to rank the roles of participants in a buying situation.

Such a ranking would be important in determining whether the hypothesized roles do in fact exist and can be measured by the contribution they make to the final outcome. To be most meaningful, it would be useful to see how the roles are perceived by the individuals involved.

In this research two major concepts will be borrowed from the models discussed above. The first is the buying center as proposed by Webster and Wind. The second is an abridged form of the buying phases. These two concepts assist especially in ease of interpretation and simplification when dealing with respondents.

The next section of this chapter deals with the research that has contributed to the study of organizational buying behavior. The criteria used in choosing material for review was its relevance to this research.

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<sup>28</sup>George Homans, Social Behavior: Its Elementary Forms (New York: Harcourt, Brace and World, 1961), Chapters 3 and 4.

### Review of the Existing Literature

Perhaps the earliest research to focus on the possible existence of buying influences on a purchasing decision in an organization was undertaken by Duncan.<sup>29</sup> In this classic study he described the general influences which might cause industrial buyers to decide on a purchase outcome. Probably due to this study, the concept of multiplicity in the decision process in industrial purchasing has become widely accepted.

Platten probably can be credited with definitely establishing the how, who and where of industrial buying decisions.<sup>30</sup> Using a cross-section of U.S. industries, he tried to define the involvement of various corporate departments in the purchasing decision.

Walsh conducted two case studies to determine how many individuals were involved in the purchasing process of industrial products.<sup>31</sup> He found that the average number was nine in one case and twelve in the other. He concluded that multiple involvement (which he termed group or committee buying) in buying decisions did in fact exist.

In another classic study, Strauss focused on the bureaucratic infighting between purchasing agents and other areas of the

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<sup>29</sup>Delbert J. Duncan, "What Motivates Business Buyers," Harvard Business Review, Vol. 18 (Summer 1940), pp. 448-453.

<sup>30</sup>J. H. Platten, How Industry Buys (New York: Scientific American, Inc., 1955).

<sup>31</sup>Charles E. Walsh, "Reaching Those Hidden Buying Influences," Industrial Marketing, Vol. 46 (October 1961), pp. 165-168.

organization.<sup>32</sup> This study, an in-depth interview with 142 purchasing agents, implicitly concludes that industrial buying behavior is a political process in which participants try to influence the outcome. Broadly speaking, purchasing agents will try to assume most of the roles (except, of course, that of user) postulated by the Webster-Wind model.

In an often mentioned study, Weigand reviewed buying influences in industrial purchasing.<sup>33</sup> He points out that each member in the buying process has a different motive in trying to arrive at the final outcome. His examples of how different points of view (marketing, manufacturing, and so forth) influence what characteristics are sought in a product is repeatedly cited in the purchasing management and marketing literature. Weigand also gives examples of how different members involved in the buying group try to influence the outcome.

The research by Grønhang lends some support to the idea that the larger the purchase and the larger the organization, the more people are involved in the final outcome.<sup>34</sup> The population in his study consisted of 30 retail stores in Norway. One hypothesis

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<sup>32</sup>George Strauss, "Tactics of Lateral Relationships: The Purchasing Agent," Administrative Science Quarterly, Vol. 7 (September 1962), pp. 161-186.

<sup>33</sup>Robert E. Weigand, "Why Studying the Purchasing Agent is Not Enough," Journal of Marketing, Vol. 32 (January 1968), pp. 41-45.

<sup>34</sup>Kjell Grønhang, "Autonomous vs. Joint Decisions in Organizational Buying," Industrial Marketing Management, Vol. 4 (1975), pp. 265-271.

formulated by Grønhang was that a positive correlation existed between joint buying and organizational size; this variable proved to have the highest coefficient of correlation (.43). A major limitation of his study was the size of the firms (some had as few as four employees).

In an examination of 148 purchasing agents, scientists, and managers, McMillan tried to determine the locus of perceived influence and responsibility in the purchase of chemical products.<sup>35</sup> A questionnaire was sent to purchasing agents along with two other questionnaires to be passed on to those they perceived as having been most involved in the decision-making process. The three respondents in each firm were asked to rate themselves and the other two members of the group as to the perceived influence of each in the decision outcome. Analysis of the scale ratings showed that scientists scored highest in both influence and responsibility.

In a similar study, Cooley, Jackson, and Ostrom measured the relative power of participants in industrial buying in a modified rebuy situation.<sup>36</sup> Questionnaires were administered to engineering, production, and purchasing personnel in 26 industrial

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<sup>35</sup>James R. McMillan, "Role Differentiation in Industrial Buying Decisions," Increasing Marketing Productivity, 1973 Proceedings, Series No. 35 (Chicago: American Marketing Association, 1973), pp. 207-211.

<sup>36</sup>James R. Cooley; Donald W. Jackson; and Lonnie L. Ostrom, "Analyzing the Relative Power of Participants in Industrial Buying Decision," in Contemporary Marketing Thought, 1977, edited by Barret A. Greenberg and Danny N. Bellenger, Educators Proceedings, Series No. 41 (Chicago: American Marketing Association, 1977), pp. 243-246.

organizations. The measurement of power was derived by asking all respondents to rate all the members involved in the buying situation; they were requested to use figures such that total allocation added to 100 percent of perceived power distribution. Engineering was found to have the dominant power in product selection, followed by purchasing, then production. Another interesting finding was the relationship between power and organization size: Purchasing personnel were more influential in organizations with less than 1,000 employees.

Patchen surveyed 33 new task or modified rebuy purchases in eleven industrial corporations.<sup>37</sup> He wanted to know who was involved and to what degree. On the average, fifteen persons were involved. Twenty of the 33 purchases were rated by the researcher as being major, the rest as minor. For major purchases, an average of 19.8 persons were involved; in minor purchases, 7.9. Patchen also investigated who had the most influence in the buying decision and why they were perceived thus by the group. He found that the individuals involved in each decision did not often agree about who had the most influence. The reason for being influential mentioned most often was the extent to which the person was affected by the outcome of the decision (24.5 percent), followed by the "expertise" the person had in relation to the decision (16.9 percent).

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<sup>37</sup>Martin Patchen, "The Locus and Basis of Influence on Organizational Decisions," Organizational Behavior and Human Performance, Vol. 11 (1974), pp. 195-221.



In a replication of an earlier work, Scientific American studied six functional areas regarding which position or title in an organization was most likely to be involved in a purchase situation.<sup>38</sup> This study covered over 2,000 U.S. industrial firms, and is the largest ever conducted on the subject. The massive cross-tabulations involved make the task of summarizing the findings impossible.

Based on sociological studies of organizational buying behavior, Robey and Johnston developed hypotheses to guide research.<sup>39</sup> They formulated eight hypotheses dealing with the relationship of structural dimensions (size) of the organization and the extent of lateral influence to the distribution of vertical authority. The major thrust of these hypotheses is to provide an analytical framework concerning the conditions under which lateral influences are likely to exist. As the hypotheses are difficult to operationalize, they will probably remain untested.

Woodside, Doyle, and Mitchell studied differences in the buying phases (new buy, modified-rebuy, and straight rebuy) of fourteen British industrial firms.<sup>40</sup> They concluded that the

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<sup>38</sup>How Industries Buy, 1970 (Scientific American, 1969).

<sup>39</sup>Daniel Robey, and J. Wesley Johnston, "Lateral Influences and Vertical Authority in Organizational Buying," Industrial Marketing Management, Vol. 6 (1977), pp. 451-462.

<sup>40</sup>Arch Woodside: Peter Doyle; and Paul Mitchell, "Organizational Buying in New Task and Rebuy Situations," Industrial Marketing Management, Vol. 8 (1979), pp. 7-11.

straight rebuy involved significantly fewer individuals than did the other two types. Furthermore, the time necessary to reach a decision was significantly less for straight rebuys than for the other two kinds.

Despite the fact that all the models discussed thus far have claimed applicability to all types of organizations, the overwhelming majority relate, in one way or another, to industrial buying behavior. Little attention has been focused on other types of organizations.

An exception is the study by Lacznia<sup>41</sup>. He surveyed eleven hospitals in order to determine who is involved in the buying process. He hypothesized that the larger the number of members in the buying center, the longer would be the time needed to reach a decision; the larger the hospital, the longer time the decision process would take; and the greater the number of suppliers, the longer time the decision process would take. Surprisingly enough, these were rejected. Previous studies of some aspects of these hypothesized relationships in the manufacturing sector yielded positive correlations. Lacznia admits that generalizations from his study are limited due to the small sample size. This research will investigate two of Lacznia's hypotheses.

Another area still lacking field research is the changing pattern of the buying center concept as it evolves through different

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<sup>41</sup>Gene R. Lacznia, "An Empirical Study of Hospital Buying," Industrial Marketing Management, Vol. 8, No. 1 (January 1979), pp. 57-62.

stages of the buying process. In other words, is the influence of the decision maker felt in all buying phases, or only in the final stage? Most research on the network of members involved in a purchase focuses on one phase in the process. Few attempts have been made to plot the behavior of buying center membership throughout the different stages.

In a recent survey, Woodside, Karpati, and Kakarigi, using a convenience sample of 14 Yugoslav firms, tried to determine who was involved in buying centers and whether multiple buying centers occurred across the different phases. They concluded that the purchasing department appears to dominate in search, evaluation, and negotiation.<sup>42</sup> Surprisingly enough, marketing was involved in more buying phases than were engineering or research. The authors provide no explanation for this. They do urge extreme caution in interpreting the data due to the nature of the Yugoslav economy, which is centrally planned.

Wind recently studied the involvement of buying center members throughout the decision stages and in the acquisition of a service or intangible good,<sup>43</sup> in this case scientific and technical information (STI). According to Wind, such information is typically

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<sup>42</sup>Arch G. Woodside, Tibor Karpati, and Dubravko Kakarigi, "Organizational Buying in Selected Yugoslav Firms," Industrial Marketing Management, Vol. 7, No. 6 (December 1978), pp. 391-395.

<sup>43</sup>Yoram Wind, "The Boundaries of Buying Decision Centers," Journal of Purchasing and Material Management, Vol. 14, No. 2 (Summer 1978), pp. 23-29.

used in the research and development activities of manufacturing organizations to aid in basic and applied research. The survey was conducted by personal interviews with 274 persons in 171 companies. The multiperson nature of this specific buying decision was clearly evidenced in the study. Different organizational roles were identified as being more important in different stages of the buying process. Roles and responsibilities differed significantly in firms of different size.

From this literature review, some conclusions can be drawn. First, empirical evidence increasingly shows that the buying process involves many people and activities crucial to the process as a whole, yet they are not part of the purchasing department.<sup>44</sup> Second, buying centers apparently differ in composition and strategy not only across industries but also within industries.<sup>45</sup> Third, considerable research is still needed to evaluate a number of key issues involved in the idea of a buying center.<sup>46</sup> Fourth, very little is known about buying centers in the health care industry, despite the fact that it has been said that "hospital decision-making may be seen as an especially illuminating example of the buying center concept."<sup>47</sup>

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<sup>44</sup> Francesco M. Nicosia, and Yoram Wind, "Emerging Models of Organizational Buying Processes," Industrial Marketing Management, Vol. 6, No. 5 (1977), p. 368.

<sup>45</sup> Bonoma and Zaltman, eds., Organizational Buying Behavior, p. 11.

<sup>46</sup> Ibid., p. 29.

<sup>47</sup> Ibid., p. 13.

The following section provides some background to the health care delivery system. This is necessary for a full appreciation of the uniqueness of the institutional setting which is the focus of this research.

### The Hospital Industry

#### Demographics

In 1977 there were 7,099 hospitals in the United States. They employed 3,200,000 people and spent over \$63.6 billion annually. These hospitals had total assets of more than \$72.2 billion. They admitted more than 37 million patients and offered 1.4 million beds.<sup>48</sup>

Although these figures sound impressive and indicate the significance of medical services, they should not obscure the fact that hospitals are not homogeneous organizations.

The 7,099 hospitals can be subdivided and classified according to ownership, type of treatment, and average length of stay (see Table 1).

There are three types of hospitals. Federal hospitals are operated primarily for the armed forces, Veterans Administration, and public health. Nonfederal hospitals, supported by state governments, are devoted to psychiatric, tubercular, and long-term illnesses. Long-term refers to an average stay of over 30 days. Most people come in contact with the third type of hospital, mainly

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<sup>48</sup>American Hospital Association, Guide to the Health Care Field, 1978 edition, p. A-10.

TABLE 2.1.--Classification of U.S. Hospitals by Type.

Type	Number
Total U.S.	<u>7,099</u>
Federal	377
Nonfederal Psychiatric	541
Nonfederal Tuberculosis- Respiratory Disease	19
Nonfederal Long Term General	189
Nonfederal Short Term General	<u>5,973</u>
Non-Government not for Profit	3,371
Investor Owned for Profit	751
State and Local Government	1,851

SOURCE: American Hospital Association, Guide to the Health Care Field (Chicago: American Hospital Association, 1978), pp. A-7 - A-9.

the voluntary, nonprofit, short-term, general hospital. This group is responsible for over two-thirds of all admissions.<sup>49</sup>

### Environment

The voluntary, nonprofit, short-term, general hospital derives its funds primarily through donations and contributions from local citizens interested in developing and maintaining medical facilities in their area. The factors that influence the location of these hospitals are thus closely related to the interest of the donors willing to contribute capital funds, the willingness of doctors to use the facilities in their practice, and the willingness of the surrounding population to use its services. This is not to say that the hospital, once established, is not subject to competition. In order to compete, the hospital must generate profits through the sale of its professional services.<sup>50</sup>

### The Organization

Viewed as an organization, the hospital has some unique characteristics which are immediately apparent: (1) round-the-clock service and highly variable and irregular workloads (admittance); (2) diverse goals and objectives which often are contradictory and conflicting; (3) a product, health care, which is difficult to measure; (4) an input and output which is the human being,

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<sup>49</sup>Ibid.

<sup>50</sup>Edit Leutz, "Hospital Administration--One of a Species," Administrative Science Quarterly, Vol. 1, No. 4 (March 1957), pp. 449-450.

apparently untransformed; and (5) constant involvement with the problems of life and death, which allows no margin for error and omission.

The work in the hospital . . . is carried out by a large number of cooperating people whose background, education, skills, and functions are as diverse and heterogeneous as can be found in any of the most complex organizations in existence. And much of the work is not only specialized but also performed by highly trained professionals--the doctors--who require the collaboration, assistance, and service of many other professional and non-professional personnel . . . in addition . . . there is the nursing staff . . . in addition . . . there are the hospital administrator and a number of administrative-supervisory personnel . . . there are also a number of medical technologists and technicians . . . and apart from all of these . . . there is a board of trustees which has the overall formal responsibility for the organization . . . [and who] offer their services to the hospital without remuneration and are not employees of the organization.<sup>51</sup>

Because of this extensive division of labor and professional specialization, almost all personnel are highly interdependent. This leads to the need for a very high degree of coordination of functions and activities.

All hospital activities are directed toward facilitating complex and specialized medical techniques. Those who have the power to make and implement decisions are the board of trustees, the medical staff, and the administrators. Unlike any other kind of organization, none of these three groups has the final power to decide in all situations. For example, neither the board of

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<sup>51</sup>Basil S. Georgopoulos, and F. C. Mann, "The Hospital--An Organization," in Hospital Organization and Management, edited by Jonathan S. Rakich and Kurt Darr, 2nd ed (New York: Spectrum Publications, Inc., 1978), p. 20.



trustees nor administrators can interfere in decisions about the treatment of a patient.

Each of the three groups has a main interest. The trustees involve themselves primarily in the overall policies of the hospital, particularly its financial stability and relation with the community. The administrator (also known as superintendent, executive director, executive vice-president, president, chief executive officer, and so forth), while sharing the views of the trustees to a large extent (often he is a member of the board), makes daily administrative decisions. He is mainly involved in the managerial aspects of the hospital and in carrying out the policies of the board. Finally, the medical staff is primarily concerned with the medical problems and well-being of their patients.<sup>52</sup>

The only authority the board has over a physician is the right to grant or withdraw hospital privileges.<sup>53</sup> The doctors form a group known as the medical staff. It is divided into committees or departments, such as surgery, pediatrics, and cardiology. The general staff is paid for by the patients they admit, not by the hospital.

Some authors suggest that other groups, composed of non-physicians and nonprofessional staff, have varying degrees of

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<sup>52</sup> Temple Burling; Edith Lentz; and Robert Wilson, The Give and Take in Hospitals (New York: G. P. Putnam's Sons, 1967), p. 37.

<sup>53</sup> Paul Gordon, "The Top Management Triangle in the Voluntary Hospital," Hospital Administration, Vol. 9, No. 2 (Spring 1964), pp. 46-72.

interest in the decision-making process.<sup>54</sup> This stems from their involvement in the personal care of patients. They may seek to influence decisions in the nonemergency and less technical facets of patients care.

This complex organizational structure usually leads to a split in authority,<sup>55</sup> with two or sometimes three separate lines of command.<sup>56</sup>

The several differences between industrial and hospital organizations frequently have not been taken into account by scholars of buying behavior in their generalizations.

. . . the techniques of management as they are defined for industry will probably not be immediately applicable to hospital medicine. It is too easy to assume that analogies can be made between hospitals and industries. Although there is much to be learnt from the expanding experience of business management, many aspects will require fundamental reinterpretation before this can be applied to hospitals!<sup>57</sup>

### The Purchasing Function

As in manufacturing organizations, the purchasing function in hospitals is performed by a purchasing group. The number and

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<sup>54</sup>Edmund D. Pellegrino, "The Changing Matrix of Clinical Decision-Making in the Hospital," in Organization Research on Health Institutions, edited by Basil S. Georgopoulos (Ann Arbor: University of Michigan, 1972), p. 304.

<sup>55</sup>H. L. Smith, "Two Lines of Authority Are One Too Many," Modern Hospital, Vol. 84 (March 1955), pp. 59-64.

<sup>56</sup>Robert Straus, "Hospital Organization from the Viewpoint of Patient-Centered Goals," in Organization Research on Health Institutions, p. 205.

<sup>57</sup>T. Anderson, "The Hospital Clinicians' Role from Two Standpoints," Lancet, Vol. 2 (1967), pp. 1246-1248.

titles of those involved in this department are directly related to the size of the institution. Furthermore, delegation of authority, as in other types of organizations, is related to the management styles inherent in the hierarchy.

There are many dissimilarities between the manufacturing and the hospital sectors. The hospital must respond rapidly to a high and variable flow of patients and their demands for immediate care. This gives rise to a corresponding fluctuating demand on services and resources.<sup>58</sup> An increase in the number of admissions by the medical staff gives rise to a multiplicative effect on the component parts of the hospital organization (pharmacy, laboratories, supplies, services, and so forth), which must have the necessary items or products in inventory in order to deal with this demand.<sup>59</sup> Furthermore, response has to be almost immediate. No hospital wants the notoriety of having lost a patient because an item was out of stock. Admittedly, due to the substitutability of treatment, such situations are rare, but the point is that resources must be readily available.

Harris postulates that should physicians perceive a scarcity of available resources, the hospital may witness a mad scramble of

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<sup>58</sup>John P. Young, "A Conceptual Framework for Hospital Administrative Decision Systems," Health Services Research, Vol. 3, No. 2 (Summer 1968), p. 81.

<sup>59</sup>Ibid.

doctors trying to grab all possible resources for their patients.<sup>60</sup>  
They would try to hedge against possible shortages of supply.<sup>61</sup>

Hospitals have considerable latitude in the purchase of medical equipment. Once the necessary internal decisions have been made, they can proceed in the acquisition. The exception is equipment valued above \$100,000. In such cases a proposal justifying the need must be prepared and submitted to the Health Systems Agency, which approves or vetoes the purchase. According to the administrators interviewed in this study, a veto is seldom, if ever, given.

As can be seen, many of the buying characteristics of hospitals are unparalleled in the manufacturing sector.

### Summary

From the discussion presented in this chapter, several points can be made. First, there is an abundance of well-developed models and theories regarding organizational buying behavior. Second, few empirical studies has been conducted within the framework postulated by the models. Third, contrary to management theory, there still remains a large gap in the knowledge concerning organizational buying behavior. Fourth, there is a serious lack of empirical studies aimed at increasing understanding of the buying decision process as it relates to organizations. Fifth,

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<sup>60</sup>Jeffrey E. Harris, "The Internal Organization of Hospitals: Some Economic Implications," The Bell Journal of Economics, Vol. 8, No. 2 (Autumn 1977), pp. 467-482.

<sup>61</sup>Ibid., p. 478.

whatever understanding has been achieved has not been applied to the nonmanufacturing industries. Sixth, the buying process in hospital institutions should not, and cannot, be generalized from the knowledge acquired in other areas. To do so would be to overlook the unique circumstances of the health care environment. Without research specifically aimed at this area, the knowledge of hospital buying behavior will remain incomplete.

## CHAPTER III

### RESEARCH METHODOLOGY

#### Introduction

This chapter reviews the research design, describing in great detail the different phases of information gathering so as to define the scope of the study. The research questions and hypotheses are presented and discussed. The sample design and the data collection instrument are described. The chapter concludes with an outline of the statistical techniques used.

#### Research Design: Exploratory Phase

Phase I of the two-part research design consisted of an exploratory survey conducted by the researcher in several major hospitals, not including the ones that were finally chosen for the test. The selection of these hospitals was based on the convenience of their location and on the willingness of their personnel to participate. It was felt that there was no need for a scientifically selected sample due to the very nature of this preliminary phase. The main objective was to gather as much data as possible on the operational aspects of hospitals, in general, and on the purchasing patterns of these institutions, in particular.

The intent was to interview as many persons as possible who had in any way been involved in a recent purchase. It was hoped

that a clear understanding of the environment would be obtained, essential to the subsequent phases of the research.

The researcher contacted the chief administrator of the selected hospitals and through him gained access to other members of the organization. Interviews with administrators varied from 30 to 90 minutes. The sessions were totally unstructured, and the interviewees did most of the talking. Attention was focused on hospital administration and the relationships among staff members and between staff and administration.

It became apparent during the first interview that a tape recorder inhibited lengthy answers on the part of respondents; discrete note taking was substituted. Furthermore, it was realized that a battery of hypothetical questions, beginning "what happens if," "how would you deal with," and "is it true that when" had to be prepared before hand and posed to interviewees as if they had just occurred to the interviewer. This was necessary to avoid long lapses of silence and/or wandering from the relevant issues.

Following the informal interview, and with the prior knowledge and approval of the administrator, the hospital's director of purchasing was contacted. A similar interview pattern was followed (although with a narrower focus), and an invoice of a recent purchase made by the institution was requested. No stipulation, at this stage, was made regarding a specific product type. After discussing with the purchasing agent the flow of a purchase request, the criteria used, and so forth, the researcher requested an interview with the person who had placed the internal order.

Discussions with that individual revealed the user or users of the purchased product. This procedure is similar to the methodology used by Laczniak.<sup>1</sup>

This exploratory phase lasted five weeks and was extremely helpful in solidifying the personal knowledge of the researcher regarding hospital management and practice. In addition, several useful informal findings were made.

The administrator was rarely involved in purchases below a certain amount. For large purchases, the administrator approved the order before it was sent to the supplier or, in a few cases, after it had been sent. This procedure was apparently related to the management style of the administrators involved. All the items for which this procedure was used would be classified as straight rebuys and modified rebuys by Robinson, Farris, and Wind's schema.

In the case of a new buy, as would be expected, the procedure was more complex, and the administrator's involvement was constant. This fact was the key element in determining that administrators would be the focal point of this research, given the hierarchical level and the unique role the administrator has in the management of a hospital when compared to that of a chief executive in a manufacturing sector.

It became evident that few items on the hospital inventory list could be identified as new buys. Those that qualified as such

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<sup>1</sup>Eugene R. Laczniak, "An Evaluation of the Purchasing Practices Utilized by Hospitals in the Procurement of a Sophisticated Medical Device" (Ph.D. dissertation, University of Wisconsin, 1976).



included, among others, drugs, general hospital equipment (such as beds, wheelchairs, and kitchen items), and medical equipment (that is, all equipment used in the analysis of illness or for monitoring the patient).

The first two items, pharmaceuticals and general hospital equipment, were discarded as a focus for this study. Pharmaceuticals did not lend themselves to an analysis within the framework of the buying center concept because the unique relationship between patient and physician does not allow any interference from outside sources. Even another physician cannot ethically administer an alternative drug without prior consent from the attending doctor. True, hospitals have tried to narrow the list of drugs they carry in inventory by adopting formularies, or lists of drugs, which are chosen and approved by an appointed committee. However, individual physicians can, and do, prescribe any drug they deem appropriate, whether on the formulary or not. General hospital equipment was rejected because it does not involve one of the key members of the hospital organization. The physician rarely, if ever, is concerned with such purchases.

The product class finally selected, medical equipment, had elements of commonality across all hospitals and thus would be appropriate for a cross-sectional study of purchasing patterns. It also seemed to involve the full range of buying roles. Furthermore, at least one individual, the administrator, was apparently involved in most aspects and stages of the buying process, and he could be called upon to describe the involvement of the other members of the

organization. Finally, he has the unique vantage position of having to manage different groups of members, each of them with very different foci of interest and commitments toward the organization.

The exploratory survey was thus critical in narrowing and refining the research questions. At the same time, some elements of the buying center concept could be investigated and a better understanding obtained of the buying behavior of institutions.

Based on this phase of the research, the next step was to generate hypotheses for testing. These were grounded on some aspect of the theory of organizational buying behavior.

#### Research Design: Research Hypotheses Phase

Phase II of the research design involved generating research questions and hypotheses to serve as major guidelines for the study. During this second, or validation, phase, several overall questions were formulated.

1. What is the evolution of the purchasing process for major medical equipment in health care institutions?
2. What is the nature of the buying center as it applies to nonmanufacturing industries? Is a simple transfer of role definitions valid and sufficient?
3. Who are the members involved in the purchasing process in the health care delivery sector?

Stemming from these queries, specific research questions were posed.

1. Is there a relationship in institutions among or between the number of participants in the purchasing decision, the number of alternative products, and/or the size of the organization in terms of the time needed for the final decision to purchase.

2. How important is each designated role in the buying center as it relates to each stage of the buying process?

3. Are all five roles (influencer, decider, gatekeeper, buyer and user) necessary to the buying center as it applies to institutions, or are some roles nonexistent or nonidentifiable?

4. Do the designated roles operate in different product classes of purchases?

5. What is the ranking in importance, as seen by the institutions, of the different criteria used in making the final selection?

6. How are the designated roles ranked in importance in contributing toward the final purchasing decision?

7. Can each designated role of the buying center be related to individual members of the organization, or are the roles redundant? Should they be eliminated?

The research questions deal with, first, the viability of transferring the buying center concept into the context of the purchasing decision process of institutions without refining or reassessing some of its definitions. Second, they are aimed at a better understanding of how the concept of organization members

(even if all are not part of the "buying center"), with their distinct roles, who perform the purchasing decision can be related to other factors that might have some bearing on the final outcome.

The hypotheses generated from these research questions can be stated as follows:

- H<sub>1</sub>: The more members involved in the decision process the longer it will take to reach the decision.
- H<sub>2</sub>: The larger the number of alternative products considered the longer it will take to reach the decision.
- H<sub>3</sub>: The larger the organization the longer it will take to reach the decision.
- H<sub>4</sub>: Participants do not perceive the existence of five roles in the buying center.
- H<sub>5</sub>: The buying center's membership composition will differ for different types of purchases.
- H<sub>6</sub>: The role assigned to themselves by participants will be the role they perceive as being most important.
- H<sub>7</sub>: The buying center's membership composition will differ through each stage of the buying process.
- H<sub>8</sub>: Participants will view their role as constant in each of the stages.
- H<sub>9</sub>: Participants will perceive differential importance in each role.

In addition to testing these hypotheses, this research is also exploratory. Therefore, it will provide some descriptive measures of the nature of the buying center concept as it applies to health care institutions.

### Sample Design

The sample selected for study was the total universe of hospital administrators in the State of Michigan. For several reasons it was felt that the research should be confined to one state rather than attempt a cross-sectional sample of the United States. First, the probability of obtaining a higher rate of responses to the questionnaire was enhanced by the narrower focus. Respondents who could readily identify the university from which the research was conducted were likely to be willing to respond. Second, studies using large samples of mail questionnaires were not reported in the hospital management literature, which meant the expected returns could not be established. Using a statewide sample, if the rate of response proved too small for meaningful statistical analysis, the researcher could easily contact recipients by telephone or personal interview to encourage participation. Obviously, if the sample had been national, time and money constraints would have prohibited such a measure. Furthermore, the researcher is unaware of any unique characteristic of the Michigan hospital industry that would bias the results.

In 1978 there were 252 hospitals in Michigan.<sup>2</sup> The names and addresses of the administrators of these institutions were obtained from the American Hospital Association roster.<sup>3</sup>

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<sup>2</sup>Hospital Statistics, 1978 edition (Chicago: American Hospital Association, 1978), pp. 84-85.

<sup>3</sup>American Hospital Association, Guide to the Health Care Field, 1978 edition (Chicago: American Hospital Association, 1978), pp. A-110 - A-118.

To encourage a high rate of responses and because individual identification was not important, respondents were assured of anonymity. Two mailings were made. The first was sent with a personalized covering letter; ten days later, a second mailing, with a different letter, was sent to the same people.

### The Data Collection Instrument

Because the questionnaire was somewhat complicated and lengthy, two pretests were conducted before mailings were sent. A preliminary questionnaire, reproduced in Appendix A, was compiled.

To improve the general design and ensure understanding, through suggestions and comments, a two-step presurvey was conducted. First, the questionnaire was personally given to two administrators of two major hospitals for their critical analysis. Their comments were incorporated into the final form. Second, sixteen questionnaires were sent to a randomly selected sample of administrators with a covering letter (Appendix B) requesting their help in clearing up any ambiguity. Seven people responded, and their suggestions were incorporated into the final form. The sixteen participants in the pretest were not included in the final population. The revised questionnaire was sent to 236 administrators.

The data collection instrument was designed such that the majority of questions could be answered with a simple check mark. Appendix C reproduces the covering letter for the first mailing. Appendix D reproduces the covering letter for the follow-up. Appendix E reproduces the questionnaire in its final form.

### Statistical Techniques

Aside from classification and simple aggregation of raw responses to the questionnaire, the principal statistical techniques used were cross-tabulation and chi square analysis.

Cross-tabulation is a common analytical method which involves simultaneously counting the number of observations that occur in each of the data categories of two or more variables.<sup>4</sup>

In order to determine whether or not the variables are statistically independent, the chi square statistic is used. This technique consists of comparing the observed set of data with another set computed on the assumption of the null hypothesis, that is, assuming that there is no relationship in the distribution or the means of classification. Chi square ( $\chi^2$ ) is expressed algebraically in the form

$$\chi^2 = \sum_{i=1}^n \left[ \frac{(f_o^i - f_e^i)^2}{f_e} \right],$$

where:

$i$  = denotes the  $i^{\text{th}}$  cell in the table;

$n$  = the number of cells;

$f_o^i$  = the observed value for cell  $i$ ; and

$f_e^i$  = the assumption or expected value for cell  $i$  on the assumption of the null hypothesis.

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<sup>4</sup>Paul Green, and Donald S. Tull, Research for Marketing Decisions, 4th ed. (Englewood Cliffs, N.J.: Prentice Hall, Inc., 1978), p. 241.

If the computed value of chi square is very low, then there is a high probability that the differences between the observed and computed, or independent, values could have resulted from a sampling variation. In such a case the null hypothesis is accepted, for it would then appear likely that the observed sample "relationship" is due to nothing more than random sampling variation. If the computed chi square is very high, then it is assumed that the sample members were drawn from a population whose characteristics are not independent of one another. Hence, the null hypothesis is rejected, and it is inferred that the characteristics are related.<sup>5</sup>

Chi square measures only the dependence or independence of the variables observed. It does not provide information regarding the strength between two or more variables in a cross-tabulation. This strength of association as well as the statistical significance of the association is most often called "indexes of agreement."<sup>6</sup>

A number of statistics are available which adjust the computed value of chi square in order to assess the strength of the relationship.<sup>7</sup> In this research, the agreement index used is the contingency coefficient. It is related to the chi-square and is defined as

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<sup>5</sup>Robert Ferber, Market Research (New York: McGraw-Hill Book Co., Inc., 1949; reprint ed., McGraw-Hill Book Co., Inc., n.d.), p. 261.

<sup>6</sup>Green and Tull, p. 286.

<sup>7</sup>Ibid.



$$C = \left( \frac{\chi^2}{\chi^2 + N} \right)^{\frac{1}{2}},$$

where N is the total sample size.

The contingency coefficient has a minimum value of zero, but the maximum value can never attain unity. The latter depends on the size of the table. In a 2 x 2 table the maximum value is 0.707; in a 4 x 4 table, it is 0.87. For this reason, the technique should be used only to compare tables with the same number of rows and columns.<sup>8</sup>

The statistical analysis of this research was performed by using the statistical package for the Social Sciences (SPSS).

### Summary

In several phases, the boundaries of the research were defined. The exploratory stage consisted of unstructured interviews with members of several institutions to gain a broader knowledge of the environment. Information thus gained was integrated with existing theory and models of organizational buying behavior. This integration provided the basis upon which the research questions and hypotheses were formulated. The exploratory process, the questionnaire design, the choice of the sample, and the recipient in the organization most suited to provide the necessary data emerged.

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<sup>8</sup>Norman Nie et al., Statistical Package for the Social Sciences, 2nd ed. (New York: McGraw-Hill Book Co., 1975), p. 225.

Cross-tabulation and chi square analyses were deemed appropriate for testing the hypotheses. Cross-tabulation of the data should provide not only extensive descriptive knowledge of institutional purchasing, but also grounds for further hypotheses.

Chapter IV discusses the results of the findings through an analysis of the answers provided by the respondents.

## CHAPTER IV

### RESULTS OF THE RESEARCH

#### Introduction

This chapter reviews the research findings on the buying behavior of health cares institutions. It is divided into two major sections. The first analyzes the distribution of responses obtained and the possible inferences that can be drawn from the data. The second offers a step-by-step analysis of the hypotheses tested. In that section, further hypotheses derived from the survey also are postulated. Finally, a descriptive review is presented of the pertinent facts associated with the findings.

#### Analysis of Respondents

A brief review of the population studied is appropriate. There were 252 hospitals in the State of Michigan in 1978. Table 4-1 shows the distribution of these hospitals by type. Table 4-2 shows the distribution of responding hospitals by type.

The first mailing was sent to 236 of the 252 hospitals. As explained earlier, the difference is accounted for by the ineligibility of pretest recipients and overlapping directorships.

The second mailing was sent to 220 hospitals because 16 respondents to the first mailing selected, for some reason, to

TABLE 4-1.--Michigan Hospitals, by Type, 1978.

Type	Number of Hospitals	Percentage of Total Population
Federal Government	8	3.2
Nongovernment Not-For-Profit (Community Hospitals)	159	63.1
Investor Owned (for profit)	3	1.2
State and Local Government	50	19.8
All Others <sup>a</sup>	<u>32</u>	<u>12.7</u>
TOTAL	252	100.0

<sup>a</sup>In this category are included psychiatric institutions, tuberculosis and other respiratory disease hospitals, and hospital units of institutions.

SOURCE: American Hospital Statistics, 1978 (Chicago: American Hospital Association, 1978).

TABLE 4-2.--Michigan Hospitals Responding to the Survey, by Type, 1978.

Type	Number of Responding Hospitals	Percentage of Total Population
Federal Government	6	4.5
Nongovernment Not-For-Profit (Community Hospitals)	83	69.4
Investor Owner (for profit)	2	1.5
State and Local Government	29	21.6
All Others	<u>4</u>	<u>3.0</u>
	134	100.0

identify themselves either in the core questionnaire or by attaching a covering letter to the returned form.

The total number of responses received was 154, a response rate of 61 percent. Of these, 130 questionnaires were used in the tabulation. The 24 were discarded for several reasons. One hospital had ceased to exist as of December 1978. Sixteen hospitals (in the "all others" category in Tables 4-1 and 4-2) did not think the questionnaire applied to them because they were highly specialized and very seldom acquired major medical equipment. Twelve of these answered Parts A and B (general information) of the questionnaire and made the same comments. Four answered all questions. Finally, seven hospitals revealed that they were managed by the same board of trustees, which had to give approval before any types of questionnaire could be answered.

Because most respondents in the "all other" group gave the same reason for not responding (that is, they did not make purchases of major medical equipment), it was felt that this explained the low response rate for the whole group. The group was eliminated from the analysis (including the four respondents who had answered the questionnaire in its entirety).

Table 4-3 shows the frequency distribution of responses finally used by hospital type. Table 4-4 shows the frequency distribution of responses by size of hospital. From among the modified Michigan hospital population of 220, 130 responses were used, a response rate of 59 percent.

TABLE 4-3.--Modified Breakdown of Michigan Hospitals by Type.

Type	Number of Hospitals in Population <sup>a</sup>	Percent of Total	Number of Respondents	Percent of Total
Federal Government	8	3.6	6	4.6
Nongovernment Not- for-Profit	159	72.2	93	71.5
Investor Owned (for Profit)	3	1.4	2	1.5
State and Local Government	50	22.8	29	22.3
TOTAL	220	100.0	130	100.0

$\chi^2 = 62.39$  - significant at the .001 level

<sup>a</sup>American Hospital Statistics, 1978 (Chicago: American Hospital Association, 1978).

TABLE 4-4.--Breakdown of Michigan Hospitals and Responding Hospitals, by Size.

Number of Beds	Total Population <sup>a</sup>	Percent of Total	Total Respondents	Percent of Total
6 - 24	11	4.4	6	4.6
25 - 49	37	14.7	17	13.1
50 - 99	55	21.8	35	26.9
100 - 199	61	24.2	25	19.2
200 - 299	34	13.5	20	15.4
300 - 499	31	12.3	20	15.4
500 or more	<u>23</u>	<u>9.1</u>	<u>7</u>	<u>5.4</u>
TOTAL	252	100.0	130	100.0

$\chi^2 = 62.39$  - significant at the .001 level

<sup>a</sup>American Hospital Statistics, 1978 (Chicago: American Hospital Association, 1978).

NOTE: The total hospital population includes psychiatric and tuberculosis and other respiratory disease hospitals. The total for respondents do not include this class.



The method of data collection does not qualify as a random sample. The responses received thus represent 59 percent of the total population returning the answered questionnaire.

Based on the demographic characteristics of size of hospital (measured in number of beds) and type of hospital and given the frequency distribution of respondents in the total population, respondents may be considered very representative of the total population. The frequency distribution of these two demographic variables are significant at the .001 level.

#### Hypotheses Tested

The survey attempted to test several hypotheses.

- H<sub>1</sub>: The more members involved in the decision process the longer it will take to reach the decision.
- H<sub>2</sub>: The larger the number of alternative products considered the longer it will take to reach the decision.
- H<sub>3</sub>: The larger the organization the longer it will take to reach the decision.
- H<sub>4</sub>: Participants do not perceive the existence of five roles in the buying center.
- H<sub>5</sub>: The buying center's membership composition will differ for different types of purchases.
- H<sub>6</sub>: The role assigned to themselves by participants will be the role they perceive as being most important.
- H<sub>7</sub>: The buying center's membership composition will differ through each stage of the buying process.

H<sub>8</sub>: Participants will view their role as constant in each of the stages.

H<sub>9</sub>: Participants will perceive differential importance in each role.

### Research Findings

In this section the results as they apply to each hypothesis are given, followed by a brief discussion.

Table 4-5 presents the distribution of respondents regarding the dollar value involved in the purchase of medical equipment. This table is included because these data were used directly in some of the statistical computations, and it serves as a guide to the different magnitudes of investment.

H<sub>1</sub>: The more members involved in the decision process the longer it will take to reach the decision.

The computed contingency coefficient for Hypothesis 1 was .86658 at a significance level of .001, which strongly supports the existence of an association between the number of members involved in the decision-making process and the length of time required for a decision. This finding is similar to those reported for the manufacturing sector. Thus, Hypothesis 1 is accepted.

Table 4-6 indicates the number and category of hospital members involved in the decision-making process for the purchase of major medical equipment. Analysis of the table reveals that, in the majority of cases, nurses are not involved in the purchase of medical equipment, and only one member of each of the other groups is involved.

TABLE 4-5.--Distribution of Dollar Value of Latest Medical Equipment Purchased  
by the Responding Hospitals.

	Absolute Frequency	Relative Frequency
Under \$25,000	38	29.2
\$ 25,000 - 50,000	19	14.6
\$ 50,000 - 75,000	16	12.3
\$ 75,000 - 100,000	19	14.6
\$100,000 - 200,000	17	13.1
Over \$200,000	<u>21</u>	<u>16.2</u>
TOTAL	130	100.0

TABLE 4-6.--Percentage and Category of Hospital Members Involved in the Decision-Making Process for the Purchase of Major Medical Equipment.

	Number Involved (in percent)				
	None	1	2-3	4 or more	Total
Nurse	<u>45.0</u>	18.0	19.8	17.1	100.0
Purchasing Agent	14.3	<u>74.1</u>	10.7	.9	100.0
Engineer	30.3	<u>56.6</u>	12.1	1.0	100.0
Administrator	3.3	<u>65.0</u>	27.6	4.1	100.0
Chief of Medical Staff	41.0	<u>48.0</u>	6.0	5.0	100.0
Department Heads	9.2	<u>54.6</u>	18.5	17.6	100.0

Table 4-7 shows the number of months necessary to move from one stage to the next of the buying process, as assessed by the respondents. Once the need for equipment is identified, progress through each of the other phases is reasonably fast, elapsed time in each being less than two months. The disparity between the answers given by the respondents (27.9 percent gave the time elapsed as between one and two months, and 26.4 percent said more than seven months) may be explained in part by the fact that although the perception of the need may have developed quickly, it was brought to the attention of the administrator after a certain maturation period. In other words, time elapsed between the perception of the need by the user and by the administrator.

H<sub>2</sub>: The larger the number of alternative products considered the longer it will take to reach the decision.

Table 4-8 indicates the percentage of instances in which a choice of medical equipment was available. In other words, when a purchase was being considered, there may or may not have been one or more comparable products from which to choose.

The computed contingency coefficient level was at the significance level of .10, which means that the hypothesis is not supported by the data. There are three possible explanations. First, it may be that few alternatives exist for much medical equipment, so no strong association can be expected. Second, and possibly more likely, owing to the unique features and characteristics sought by the buyer, a specific piece of medical equipment made by a

TABLE 4-7.--Time Elapsed in Each of the Stages of the Purchasing Decision (in percent).

Stages of the Buying Process	Time Elapsed (in months)				
	Less than One Month	1-2	3-4	5-6	More Than Seven Months
Perception of need for medical equipment	17.1	27.9	17.8	10.9	26.4
Development of specifications of medical equipment	35.7	34.1	20.2	7.0	3.1
Identification and evaluation of alternative suppliers	25.6	45.0	16.3	9.3	3.9
Final choice and selection	47.3	36.4	8.5	3.1	4.7

TABLE 4-8.--Frequency of Cases in Which an Alternative Existed  
for Medical Equipment Purchased.

Alternative	Percent
No Other Alternative	29.2
One Other Alternative	13.1
Two to Three Alternatives	46.9
Four to Five Alternatives	6.2
More than Five Alternatives	4.6

certain manufacturer is decided upon from the outset. Third, due to the nature of the equipment, some may have to be tailor-made for a particular hospital, and thus the length of decision time is not related to the number of alternatives.

H<sub>3</sub>: The larger the organization the longer it will take to reach the decision.

Interestingly enough, contrary to what would have been expected, Hypothesis 3 was rejected. The computed significance level of the contingency coefficient was above the .10 level. This rejection of the hypothesis is in line with a prior finding, which is discussed in Chapter II, in the health care field, but contrary to the findings reported in the industrial buying behavior environment.

There are several possible explanations. First, regardless of the size of the organization, due to the highly technical nature of purchases, those individuals best suited to evaluate and decide upon the purchase are involved. Since these individuals have similar professional backgrounds and roughly equal influence in the organization, a consensus can be reached quickly, allowing them to return to their "normal" activities. A second possibility is that the need for the equipment is obvious to everyone involved and, again, the decision makers are roughly coequal, so that the question of organization size has no bearing on the decision to purchase. Another explanation concerns the type of relationship between the medical staff and the administrative structure of the hospital. To the physician, the equipment is needed--the sooner the better--



"management" must buy it, or physicians will refer their patients to another hospital. This last explanation may involve questionnaire bias. The question required respondents to recall how long it took the hospital to go through each of the purchase process phases. It is possible that the time elapsed was longer or shorter than what respondents remembered it to be.

H<sub>4</sub>: Participants do not perceive the existence of the five roles in the buying center.

Table 4-9 depicts the roles that respondents viewed as not operating in the purchase of medical equipment.

The results of testing the hypothesis are deemed to be inconclusive. Almost one-fourth of the respondents (23.5 percent) could not specifically identify the gatekeeper role, and 14.8 percent could not identify the buyer, 12.2 percent the decider.

It is interesting that the gatekeeper role presented so much difficulty. This may be attributable to the fuzziness of the definition of that role, not to the fact that it does not exist in the health care environment. It is strongly felt that before any generalization regarding this role can be made, further and extensive study should be conducted.

H<sub>5</sub>: The buying center's membership composition will differ for different types of purchases.

Among the total respondents, 92 percent acknowledged that different members composed the buying center for different types of purchases made by the hospital. This finding is similar to those reported in the industrial sector.

**TABLE 4-9.--Roles that Respondents Interpreted as Not Applicable  
in the Purchasing Process of the Health Care Sector.**

Roles	Percentage of Responses
Influencer	4.3
Buyer	14.8
Decider	12.2
Gatekeeper	23.5
User	9.6

**NOTE:** The total does not add to 100 because some respondents did not attach any described role to some hospital members involved in the purchase decision.

Furthermore, 79.6 percent of the respondents perceived that the composition of the hospital buying center is "never the same." This is strong support for the view that almost every purchase made can be considered unique, with different persons involved and interested in the outcome.

H<sub>6</sub>: The role assigned to themselves by participants will be the role they perceive as being most important.






In 63.1 percent of the cases, respondents viewed themselves as having the deciding role throughout the purchasing process. Another 30.8 percent saw themselves in the influencer role.

Table 4-10 shows the ranking assigned by the respondents to each of the roles described.

Computing the rankings by adding the roles scoring first and second in each of the categories reveals that the decider is ranked first in 67.6 percent of the cases; second is the user, with 54.7 percent. These data tend to support the hypothesis that respondents view themselves as having exercised the role which they considered most important, namely, that of decider. However, those who viewed their role as that of influencer considered the role of user more important.

One possible explanation for this attitude could be the management structure in the health care field. In some hospitals, the administrator is the chief executive and has the ultimate power to decide. In other hospitals, that position is more related to administration, and the occupant may influence the decision outcome

TABLE 4-10.--Ranking of Roles in the Buying Center (in percent).

Role	Rank					Total
	Most Important 1	2	3	4	Least Important 5	
Influencer	23.7  49.1	25.4	<u>28.0</u>	16.1	6.8	100.0
Buyer	6.8  17.8	11.0	18.6	<u>38.1</u>	25.4	100.0
Gatekeeper	2.5  16.1	13.6	13.6	23.7	<u>46.6</u>	100.0
Decider	<u>38.5</u>  67.6	29.1	17.9	6.0	8.5	100.0
User	<u>33.3</u>  54.7	21.4	22.2	13.7	9.4	100.0

NOTE: Underscored figures represent highest ranking in each class.

only to a certain extent, with the final choice being made by users of the equipment.

H<sub>7</sub>: The buying center's membership composition will differ through each stage of the buying process.

Table 4-11 lists the different hospital members who, according to respondents, compose the buying center throughout each of the four stages of the buying process.

Hypothesis 7 is strongly supported by the findings. Membership in the buying center clearly can be seen to shift during each phase of the buying process; new members appear and other members fade in importance.

As would be expected, given the nature of the environment, physicians are involved in all four stages. The need for the medical equipment is first perceived by the physicians in 68.5 percent of the cases. Although their role apparently diminishes as each stage evolves. Their presence is felt throughout.

Nurses' involvement, in comparison, is at its peak only in the first two stages (19.2 percent and 20.8 percent, respectively): perception of need and establishing specifications. It can be suggested that the involvement of nurses in the first two stages is probably due to their having to deal, most of the time, directly with patients. Thus, they are likely to perceive the need for equipment and are consulted as to what its specifications should be in order to serve patients' needs.

Purchasing agent involvement (55.4 percent) is at its peak in the identification and evaluation stage of the buying process.

TABLE 4-11.--Hospital Members Involved in Each Buying Phase.

Hospital Members	Stages				Final Choice and Selection
	Perception of Need	Establishing Specifications	Identification of Alternative and Evaluate Alternative Suppliers		
Chief of Medical Staff	7.7	6.9	5.4	7.7	
Physician	68.5	66.9	43.8	39.2	
Nurse	19.2	20.8	13.8	10.0	
Purchasing Agent	3.1	20.0	55.4	30.0	
Engineer	8.5	32.3	21.5	9.2	
Administrator	22.3	26.9	42.3	59.2	
Department Head	44.6	56.2	50.8	36.9	
Board of Trustees	--	--	--	19.2	

NOTE: Totals do not add to 100 due to more than one member being involved in each phase.

Agents are the least involved in the first stage, perception of the need. Although strong, their involvement in the last stage, final choice and selection, is still less than that of other members.

Engineers' involvement is strongly felt (32.3 percent) only in the specification stage.

The administrator's involvement in the four stages is constant. His influence is increasingly felt as the purchase progresses and it becomes the dominating factor in the last stage (61.7 percent).

Department heads are very much involved and their influence is felt in each stage. This is not surprising considering the function they perform in the hospital. Their involvement outranks that of administrators in three of the four stages.

Figure 4-1 summarizes and ranks the pattern of involvement of hospital members in each stage.

H<sub>8</sub>: Participants will view their role as constant in each of the stages.

The findings reject Hypothesis 8. Table 4-12 shows the respondents' perception of the role that best described their involvement in the buying center.

Respondents view themselves as having been differentially involved, as to their role, during each stage of the buying process. Concerning the first two phases, 28.3 percent and 34.5 percent, respectively, view themselves as playing no part. However, in the final stage, 65.5 percent viewed themselves as deciders and

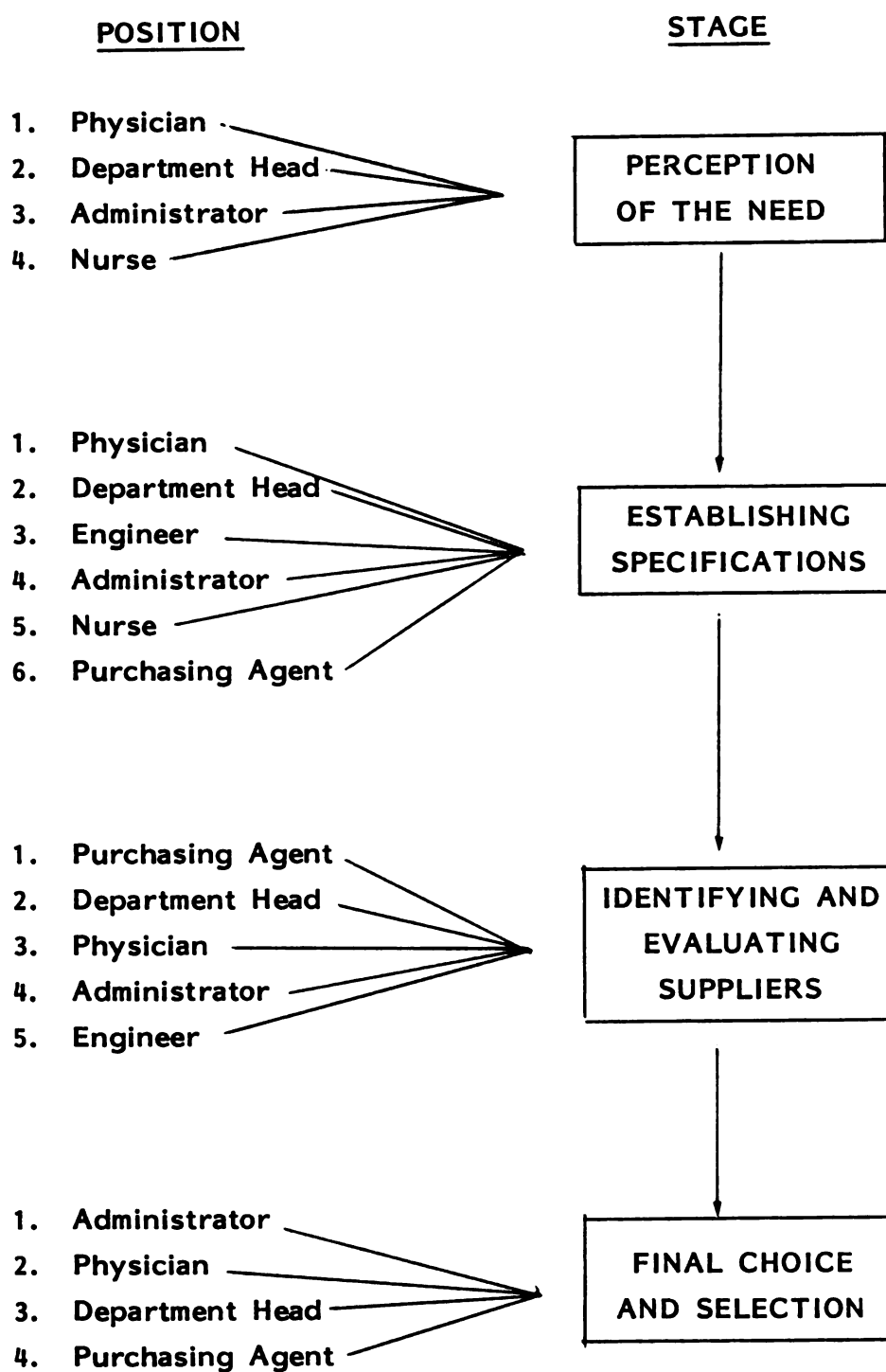


Figure 4-1.--Summary of Perceived Involvement of Hospital Members in Each of the Purchasing Stages of Medical Equipment, Ranked by Order of Importance.



TABLE 4-12.--Perception of Role Exercised by Respondents in Each Stage of the Buying Process for Medical Equipment (in percent).

Roles	Buying Stage			Final Choice and Selection
	Perception of the Need	Specification	Identification and Evaluation of Alternatives	
Influencer	28.3	31.9	40.0	20.2
Decider	28.3	17.6	35.8	65.5
Gatekeeper	10.8	9.2	10.0	3.4
Buyer	2.5	5.9	1.7	5.0
User	1.8	.9	0	0
None (Not Involved)	<u>28.3</u>	<u>34.5</u>	<u>12.5</u>	<u>5.9</u>
	100.0	100.0	100.0	100.0

20.2 percent as influencers. These findings support the interpretation of the previous hypothesis.

The results provide intuitively appealing insights into two aspects of organizational buying behavior. First, a member of the buying center for a particular purchase may rate his involvement in one of two extreme ways: none at all, or the strongest in the group. However, because the respondents were asked to judge their own involvement and the research design did not provide for cross-verification, it would seem appropriate that further study of this aspect be conducted. Second, some of the roles may be somewhat irrelevant in describing certain members at various stages of the buying process. These two insights may call into question the appropriateness of the role definition of the buying center member.

H<sub>9</sub>: Participants will perceive differential importance in each role.

Table 4-13 reveals respondents' ranking in importance of the various roles.

Hypothesis 9 is accepted. The rankings were consistent, that is, the dominant role is that of decider, followed by user and influencer.

This finding tends to reinforce the marginal importance of two roles in the purchasing decision-making process of major medical equipment: that of buyer and gatekeeper.

TABLE 4-13.--Respondents Ranking in Importance of the Five Roles.

Rank	Role				
	Influencer	Buyer	Gatekeeper	Decider	User
Percent Ranking First	21.5	6.2	2.3	34.6	30.0
Percent Ranking Second	<u>23.1</u>	<u>10.0</u>	<u>12.3</u>	<u>26.2</u>	<u>19.2</u>
	44.6	16.2	15.6	60.8	49.2

### Other Findings of the Study

The information discussed below was not included in the hypotheses formulated for study. In addition to seeking data concerning those hypotheses, the responses were cross-tabulated along several dimensions to obtain information that might enrich present knowledge of the hospital purchasing process. Most of the tabulations did not provide for further meaningful interpretation. Some data, however, do permit useful insights. These findings should be viewed as exploratory only.

Table 4-14 shows the ranking of criteria used in final product selection. Quality and specifications of the equipment offered (due, probably, to the high technology involved) were cited as the two most important factors. Price apparently does not play as important a part.

Another finding was that the majority of respondents (73.4 percent) did not think the five roles were relevant for routine types of purchases of other than medical equipment. In such situations only two roles are relevant: users (66.9 percent) and buyers (65.4 percent). The user was not specified.

Finally, respondents were asked to assign two roles to each member involved in the purchase. Table 4-15 reveals the answers. It is suggested that any member within the hospital organization can exert some influence on the buying process. The measurement of the strength of such influence in modifying the purchase outcome would provide meaningful insights.

TABLE 4-14.--Ranking in Importance of Criteria Used in Final Product Selection.

	Criteria				
	Specification of the Equipment	Reliability of Supplier	Delivery Schedule	Price	Quality
					After Sales Service
Percent Ranking First	37.8	7.2	.8	8.7	46.8
Percent Ranking Second	<u>23.6</u>	<u>22.4</u>	<u>.8</u>	<u>27.0</u>	<u>26.2</u>
TOTAL	61.4	29.6	1.7	35.7	73.0
Ranking of Highest Frequency of Criteria of Responses	1 <sup>st</sup>	3 <sup>rd</sup>	5 <sup>th</sup>	4 <sup>th</sup>	1 <sup>st</sup>

TABLE 4-15.--Two Roles Assigned by Respondents to Hospital Members Involved in the Purchase of Major Medical Equipment, Ranking of Highest Two in Frequency (in percent).

Hospital Member	Role			
	Influencer	Buyer	Decider	Gatekeeper
Individual Physician	73.8	--	--	--
Nurse	33.8	--	--	--
Purchasing Agent	--	56.9	--	45.4
Engineer	36.2	--	--	10.8
Administrator	44.6	--	76.9	--
Department Head	55.4	--	--	--
Chief of Medical Staff	31.5	--	13.1	--

NOTE: Values were obtained by cross-tabulation of Roles and Hospital Members. Totals add to more than 100 because multiple choices were allowed.

### Concluding Comments

The research tends to support, in general, the validity of transposing some aspects of organizational buying behavior models into the health care sector. Two major hypotheses tested organization size and number of members involved in the decision process as related to the length of time necessary to finalize purchase--revealed low association, contrary to results of other studies in the manufacturing field. This probably is due to the uniqueness of the health care environment and might possibly indicate that care should be taken when generalizing findings within and between sectors.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

#### Overview of the Research

As the marketing literature reveals, several attempts have been made to construct explanatory models of industrial buying behavior. Of these, four are considered comprehensive enough to reflect the complexity of the purchasing task within an organization: the models developed by Robinson, Farris, and Wind; by Webster and Wind; by Sheth; and by Hill and Hillier. One way to test these models is to isolate certain variables and apply the model to a specific organizational environment. In so doing, one may prove explanatory consistency and reveal underlying strengths and weaknesses.

This research made such an attempt. It focused on two major aspects. The first was the relevance and applicability of industrial buying behavior theory, in general, and the buying center concept, in particular, as related to the purchasing process of health care institutions. The intent was to transpose into the nonindustrial sector some of the concepts which have been investigated in an industrial setting. The second focus was an attempt to contribute to knowledge about the decision processes and practices of health care institutions, mainly as they relate to the purchase of major medical equipment. In this sense the study was exploratory.



Despite the growing acceptance of the four models mentioned above, few studies have tested the framework and variables advocated by these models. The little research that has been done focuses overwhelmingly on the manufacturing sector.

The four organizational buying behavior models claim, implicitly or explicitly, applicability to all types of institutions involved in the buying of goods and services. Despite the wide acceptance and intuitive appeal of these models, little effort has been made to validate and generalize them within a nonmanufacturing environment. This research was an attempt to bridge this gap.

The core concept, the buying center, was reduced to a few basic and manageable elements in the hopes of achieving a better understanding of the purchasing process.

The health care delivery system was selected because of its importance in the economy. In 1978, health costs represented almost 9 percent of GNP, and they are projected to grow throughout the next decade. Almost \$12 billion flowed through hospital purchasing departments in 1977. A great portion is directly attributable to the explosion in diagnostic, surgical, and therapeutic technology and the purchase of this sophisticated medical equipment by health care institutions. Furthermore, the literature has neglected the purchasing environment of hospitals.

### Research Design and Results

A questionnaire was mailed to the administrators of the 252 hospitals in the State of Michigan; 134 usable responses were obtained. Because some hospitals could not answer the questionnaires meaningfully, they were excluded.

The response rate was 59 percent (130 out of 220). The chi square distribution frequency was significant at the .001 level for two of the available demographic characteristics, size and type. It was concluded that the respondents were highly representative of the nonrespondents in the population.

The major findings of the study are summarized below:

H<sub>1</sub>: The more members involved in the decision process, the longer it will take to reach the decision.

The hypothesis was supported by the findings.

H<sub>2</sub>: The larger the number of alternative products, the longer it will take to reach the decision.

The hypothesis was rejected.

H<sub>3</sub>: The larger the organization, the longer it will take to reach the decision.

The hypothesis was rejected.

H<sub>4</sub>: Participants do not perceive the existence of the five roles in the buying center.

The findings were deemed inconclusive. Further research in this areas is required.

- H<sub>5</sub>: The buying center's membership composition will differ for different types of purchases.

The survey found strong evidence to support this hypothesis.

- H<sub>6</sub>: The role assigned to themselves by participants will be the role they perceive as being most important.

This hypothesis was strongly supported by the research.

- H<sub>7</sub>: The buying center's membership composition will differ through each stage of the buying process.

The findings strongly confirmed the hypothesis.

- H<sub>8</sub>: Participants will view their role as constant in each of the stages.

The findings rejected this hypothesis.

- H<sub>9</sub>: Participants will perceive differential importance in each role.

The findings supported this hypothesis.

Other, informal findings showed that quality and manufacturer's specifications were the two most important criteria used in the final selection of equipment.

For routine purchases (no new decisions are involved and no change in characteristics need to be made), respondents rated two roles--users and buyers--as most important. Conversely, when a major new decision had to be made, the two roles rated most important were decider and user.

Respondents perceived all members of the hospital community, with the surprising exception of the purchasing agent, as being able to influence the purchase of medical equipment. None of the other four roles demonstrated such a broad identifying attribute with regard to the hospital members involved in the purchase.

### Conclusions

The major conclusions and implications of the study are summarized below.

The buying center concept proved valid in studying institutional buying habits. The exception was the role of gatekeeper, probably due to the nebulousness of the definition. The roles proved meaningful and easily understandable to the respondents, who perceived and identified each actor involved in the buying process. This should provide substantive support to the buying behavior models, especially the one proposed by Webster-Wind who outline in greater details the roles involved in a purchasing decision, as it applies to the buying behavior of nonmanufacturing institutions.

Segmentation, based solely on hospital size as measured in number of beds, appears unwarranted.

Apparently, alternative suppliers of medical equipment have to be brought to the attention of the decision-making group early in the buying process. At this stage, suppliers should heavily emphasize the quality and unique features of their products.

As has been found in the manufacturing environment, group membership in the health care buying center varies throughout the

purchasing stages. Suppliers should be aware of this changing involvement. It is thus important that sellers interact with the different members within each of the purchasing phases, so as to maximize their contact and exposure with each member at each different level. This is especially true due to the changing involvement and membership within the buying center in each of the phases.

The research has helped identify the key members within hospitals and their involvement in the decision-making process. It is to the advantage of sellers to focus on three groups: physician, department heads, and administrators.

One conclusion of this study is that many administrators are somewhat insensitive to price and are more concerned with factors affecting the performance of medical equipment, such as quality and specifications. This does not mean that price is not an important factor. It simply means that sellers should strive harder when comparing their equipment with those offered by their competition, to focus on quality and the specifications of the equipment. Furthermore, it would also appear to be a better marketing approach in those cases where no competition exists, to focus on the quality of equipment and on the existing time saving and simplicity of use of the inherent specifications of the medical equipment.

The research identified the involvement of various hospital members in each stage of the purchasing process. This indicates that suppliers should segment each purchase into component stages and aim specific sales appeals at each stage to specific individuals.

These, due to the nature of the organization and their roles within it, have differing backgrounds and technical abilities. Thus, it is suggested that, for instance, a language accessible to the physicians be used regarding the advantages he would derive from the equipment, the convenience of use and the ease of monitoring a patient or reading a clinical test. To the administrator, on the other hand, the approach and appeals should be aimed more to his professional background and to the nature of his responsibilities as to what is expected of him in the hospital. The approach should be aimed at, for instance, the reliability of the equipment, cost savings, and so forth.

The research showed that every item purchased should be viewed as unique and that the buying center for each is composed of different members. Suppliers should not take it for granted that since they supply the institution with one item, they will always be asked to supply others.

Another finding is that specific hospital members viewed themselves as having different roles in different stages of the buying process. The respondents viewed the different members of the organization as having different roles in each of the stages. For instance, department heads were classified as being in the role of influencer and user (Table 4-15) and as being of importance in each of the stages of the buying process (Figure 4-1). However, in each of the stages the stimuli for the decision making of that phase of the buying center would be expected to be different. Thus the department head, when in the role of influencer, should

be viewed by the seller as being important in making sure that he conveys his positive attitude toward the equipment, but that in the role of a user he be first convinced of the features of the equipment. Marketers should be aware of this fact and avoid always focusing on or neglecting a particular member.

The research suggests that purchasing agents in the health care field have not yet attained the involvement of their counterparts in other sectors. This is probably due to the complexity of the task and to the fluid relationships among organization members and between members and management.

#### Limitations of the Study

Research that uses specific situations to test general hypotheses usually has certain restrictions and limitations. In this case, although the rate of response was high (59 percent), no attempt was made to determine whether significant differences exist between respondents and nonrespondents. Instead, based on the frequency distribution of two important demographic characteristics, it was assumed that the direction of the findings for nonrespondents would have been similar.

Furthermore, respondents were asked for subjective answers, that is, to describe the situation as they perceive it. The research design was not structured to verify these perceptions by cross-checking with other sources within the organization.

Three other limitations should be mentioned. First, the medical equipment acquired probably differed in all but a few

instances. The only common link was monetary value and the fact that it was all medical equipment. Second, the results cannot be projected outside the environment of the health care facilities in which it was conducted. Third, the research was conducted in a specific geographic area. Generalization to the national population must be undertaken with caution.

#### Recommendations for Future Research

Although it is hoped that this research has made some contribution to the body of knowledge dealing with institutional buying behavior, many other aspects of the unique environment of health care warrant further research. Four are suggested here.

First, study of two or more members of the buying center would allow possible cross-verification of any differences in perception.

Second, exact measurement of the personal interaction among members of the buying center remains to be studied.

Third, environmental factors, such as inflation, government regulations, users, and the community and their effect on health organization buying behavior need exploratory investigation.

Fourth, replication of research conducted in the industrial environment to determine common features with the nonmanufacturing sector is needed.



## APPENDICES

## **APPENDIX A**

### **PRETEST COVER LETTER OF QUESTIONNAIRE**

# MICHIGAN STATE UNIVERSITY

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GRADUATE SCHOOL OF BUSINESS ADMINISTRATION  
DEPARTMENT OF MARKETING AND  
TRANSPORTATION ADMINISTRATION

EAST LANSING • MICHIGAN • 48824

September 3, 1979

I am a doctoral candidate at Michigan State University and my dissertation is related to organizational buying behavior in general, and hospital purchasing of major medical equipment in particular. The purpose of this research is to study buying decisions of such medical equipment from the perceived need stage through to the final decision to buy.

The final questionnaire will be mailed in the near future to all hospital administrators in the State of Michigan. Before sending out the final questionnaire, however, I would like to make sure that it contains no ambiguities. It is for this reason that I am mailing it to you. Your name is one of 15 administrators selected randomly from the total list of Michigan hospital administrators.

I would very much appreciate your taking a few minutes of your time to answer it, and then indicating on the form the parts you had difficulty in understanding and any suggestions you might have, to make it clearer. Please feel free to comment on any or all aspects you deem appropriate including, but not limited to, terminology used, breakdown of your different options in each question, vagueness of question, etc. Your suggestions will be completely anonymous and will be used solely for the purpose of improving the questionnaire design. The responses to the questionnaire itself will be shown only in the aggregated statistical tabulations, with no possibility of identifying individual respondents.

Please, help me in the effort to contribute to our knowledge of present day Hospital Administration by returning your comments and suggestions in the self-addressed stamped envelope. If I can be of assistance in providing any clarification you may need, please feel free to call me at (517) 355-7540.

Your help is very much appreciated.

Sincerely,

Joseph Sachs

**APPENDIX B**

**PRETEST QUESTIONNAIRE**

**QUESTIONNAIRE**

**DECISION MAKING PROCESS IN HOSPITAL PURCHASES**

**OF MAJOR MEDICAL EQUIPMENT**

This questionnaire has been designed so that most questions can be answered simply with a check mark.

**A. GENERAL INFORMATION**

1. What is your title in the hospital?

President	[ ]	Chief Executive	[ ]
Vice-President	[ ]	Director	[ ]
Administrator	[ ]	Other (please specify)	[ ]

2. What is your educational background?

Hospital Administration	[ ]
Physician	[ ]
Dentist	[ ]
Registered Nurse	[ ]
Business Administration	[ ]
Engineer	[ ]
Economics	[ ]
Other (please specify)	[ ]

3. Your age:

Under 30	[ ]	45-49	[ ]
30-34	[ ]	50-55	[ ]
35-39	[ ]	Over 55	[ ]
40-44	[ ]		

4. Are you a member of officer of the Board of Trustees?

Yes [ ]      No [ ]

5. Number of years you have been in the present institution:

Less than One	[ ]	6-7	[ ]
2-3	[ ]	8 or more	[ ]
4-5	[ ]		

**B. GENERAL INFORMATION ON HOSPITAL****6. Number of licensed beds in the hospital:**

Less than 24	[ ]
25 - 49	[ ]
50 - 99	[ ]
100 - 199	[ ]
200 - 299	[ ]
300 - 499	[ ]
500 or more	[ ]

**7. Type of Hospital Ownership:**

Nongovernment Not-For-Profit	[ ]
Investor Owned (for profit)	[ ]
Local or State Government	[ ]
Federal Government	[ ]
Other (please specify)	[ ]

**8. Does the medical staff report directly to the Board of Trustees?**

Yes [ ]      No [ ]

**C. THE BUYING PROCESS**

The literature dealing with organizational buying behavior recognizes the existence of five roles or actors involved in most buying situations. These roles are outlined below:

- a. **INFLUENCER(s):** Those members who influence the buying usage decision.
- b. **BUYER(s):** Those members with formal authority for selecting the supplier and the terms of the purchase.
- c. **DECIDER(s):** Those members in the organization who have the power to determine the final selection of product or supplier.
- d. **GATEKEEPER(s):** Those members who control the flow of information regarding the product and/or the supplier into the organization.
- e. **USER(s):** Those members in the organization who initiate the buying process and who will be using the product.

**PART I**

The following set of questions deal with the last major purchase of medical equipment which you considered to be a large investment made by your hospital.

Please answer them related only to this last major purchase.

9. The value of the medical equipment was:

Under \$25,000	[ ]
\$25,000 - \$50,000	[ ]
\$50,000 - \$75,000	[ ]
\$75,000 - \$100,000	[ ]
\$100,000 - \$200,000	[ ]
Over \$200,000	[ ]

10. The Chart below is designed to ascertain the responsibility of each of the roles previously described with the hospital members that participate in that purchase.

I need to know which of the hospital members you can identify as taking part in the aforementioned roles. Note that one individual can assume more than one role. A checkmark in the box(es) is sufficient.

Hospital Members							
Roles	a. Individual Physician	b. Nurse	c. Purchase Agent	d. Engineer	e. Administrator	f. Head Medical Staff or Department	g. Other (please specify)
Decider(s)							
User(s)							
Influencer(s)							
Buyer(s)							
Gatekeeper(s)							

Position or function of member identified above as "other" \_\_\_\_\_

11. Give the number of individuals involved in each of the classes of "hospital members" mentioned in the previous question: (A checkmark in the box is sufficient.)

	None	1	2-3	4 or More
Nurse(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing Agent(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engineer(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administrator(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other(s) (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Who was the first to have stated the perceived need for such equipment? (More than one answer is possible).

Head of Medical Staff or Department [ ]  
 Physician [ ]  
 Nurse [ ]  
 Purchasing Agent [ ]  
 Engineer [ ]  
 Administrator [ ]  
 Other \_\_\_\_\_ [ ]  
 (please specify)

13. Who established the specifications (i.e., the characteristics) of the equipment? (More than one answer is possible).

Head of Medical Staff or Department [ ]  
 Physician(s) [ ]  
 Nurse(s) [ ]  
 Purchasing Agent(s) [ ]  
 Engineer(s) [ ]  
 Administrator(s) [ ]  
 Other(s) \_\_\_\_\_ [ ]  
 (please specify)



14. Who identified and evaluated the various alternative suppliers once the specifications had been made? (More than one answer is possible).

Head of Medical Staff or Department	[ ]
Physician(s)	[ ]
Nurse(s)	[ ]
Purchasing Agent(s)	[ ]
Engineer(s)	[ ]
Administrator(s)	[ ]
Other(s) _____	[ ]
(please specify)	

A Committee composed of \_\_\_\_\_ [ ]  
(please specify)

15. Who made the final choice and selection of the supplier? (More than one answer is possible).

Head of Medical Staff or Department	[ ]
Physician(s)	[ ]
Nurse(s)	[ ]
Purchasing Agent(s)	[ ]
Engineer(s)	[ ]
Administrator(s)	[ ]
Other(s) _____	[ ]
(please specify)	

A Committee composed of \_\_\_\_\_ [ ]  
(please specify)

16. How long (in months) did each of the stages take?

- Perception of need for medical equipment:

Less than a month	[ ]
1 - 2 months	[ ]
3 - 4 months	[ ]
5 - 6 months	[ ]
7 or more months	[ ]

- Specification of the medical equipment:

Less than a month	[ ]
1 - 2 months	[ ]
3 - 4 months	[ ]
5 - 6 months	[ ]
7 or more months	[ ]

- Identification and evaluation of the various alternative suppliers and equipment:

Less than a month	[ ]
1 - 2 months	[ ]
3 - 4 months	[ ]
5 - 6 months	[ ]
7 or more months	[ ]

- Final choice and selection:

Less than a month	[ ]
1 - 2 months	[ ]
3 - 4 months	[ ]
5 - 6 months	[ ]
7 or more months	[ ]

17. How many alternative equipments that would have basically served the same purpose (made by the same manufacturer or by different manufacturers) were available?

Only one	[ ]
2 - 3	[ ]
4 - 5	[ ]
6 - 10	[ ]
More than 10	[ ]

18. Would the final outcome have been the same had you had sole responsibility?

Yes [ ]      No [ ]

19. Could you rank the criterias used in the final selection by order of importance (1 being the most important and 6 least important):

Specification of the equipment	Rank # _____
Reliability of the supplier	Rank # _____
Delivery schedule	Rank # _____
Price	Rank # _____
Quality of equipment	Rank # _____
Other _____ (please specify)	Rank # _____

20. Was the group of "hospital members" involved in this particular purchase, and which you had in mind when answering the previous questions, always the same in:

Everything the hospital purchases [ ]  
 Only medical-equipment [ ]  
 Only the purchase of this specific medical equipment [ ]  
 Only the items that require a big sum disbursement [ ]  
 Only non-routine purchases [ ]  
 Is seldom the same [ ]  
 Is never the same [ ]  
 Other \_\_\_\_\_ [ ]  
 (please specify)

21. Based on your experience in the hospital, in the case of acquisition, for instance, of a relatively large amount of bed sheets, do you believe that the 5 roles (i.e., influencer, buyer, user, decider, gatekeeper) have the same relevance (i.e., exist):

Yes [ ] No [ ]

22. Which of the roles do you believe are relevant for the purchase of bed sheets? (In your answer you may cover more than one).

Decider(s) [ ]  
 User(s) [ ]  
 Influencer(s) [ ]  
 Buyer(s) [ ]  
 Gatekeeper(s) [ ]

23. Given the above answer, would you say that the same group of individuals would have had the same role in the purchase of the bed sheets as the medical equipment you had in mind when you answered the previous questions?

Yes, they would be the same [ ]  
 Yes, they would be the same individuals but in different roles [ ]  
 No, they would be different individuals [ ]  
 Other \_\_\_\_\_ [ ]  
 (please specify)

24. Which of the roles above would you view yourself as having exercised most often during the purchase of the medical equipment:

Gatekeeper	[ ]
Buyer	[ ]
User	[ ]
Influencer	[ ]
Decider	[ ]

25. Were you involved in each of the stages of the purchasing process?

Yes [ ]      No [ ]

26. Was your role constant in every stage of the purchasing decision (i.e., perception of the need for the medical equipment, specification of the medical equipment, identification of various alternatives, final choice and selection)?

Yes [ ] --Go to Question #27  
No [ ]

27. Which was the role you feel best described your participation in each of the stages:

<u>STAGES</u>	<u>ROLE</u>
Perception of the need	Influencer [ ]
	Decider [ ]
	Gatekeeper [ ]
	Buyer [ ]
	User [ ]
	I was not involved [ ]
Specification of the medical equipment	Influencer [ ]
	Decider [ ]
	Gatekeeper [ ]
	Buyer [ ]
	User [ ]
	I was not involved [ ]

**STAGES****ROLES**

Identification of various  
alternatives

Influencer [ ]  
Decider [ ]  
Gatekeeper [ ]  
Buyer [ ]  
User [ ]  
I was not involved [ ]

Final choice and selection

Influencer [ ]  
Decider [ ]  
Gatekeeper [ ]  
Buyer [ ]  
User [ ]  
I was not involved [ ]

28. What is the ranking of importance you attribute to each of the roles in the purchase of this specific medical equipment (with 1 being most important role and 5 being least important role).  
Assign each of the numbers only once.

Influencer	Rank #	_____
Buyer	Rank #	_____
Gatekeeper	Rank #	_____
Decider	Rank #	_____
User	Rank #	_____

29. Did the Professional Standards Review Organization (PSRO) affect the purchasing process for major medical equipment?

Yes [ ]      No [ ]

30. If your answer was YES could you briefly describe how?

31. Further comments you would like to make on any of the questions/topics discussed in this questionnaire.

*Thank you for your time and effort in answering the above questions.*

## APPENDIX C

### COVER LETTER OF FIRST MAILING

# MICHIGAN STATE UNIVERSITY

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GRADUATE SCHOOL OF BUSINESS ADMINISTRATION  
DEPARTMENT OF MARKETING AND  
TRANSPORTATION ADMINISTRATION

EAST LANSING • MICHIGAN • 48824

September 16, 1979

I am a doctoral candidate at Michigan State University and my dissertation is related to organization buying behavior. The main focus of my survey is directed to hospital purchasing in the State of Michigan.

The purpose of this research is to study buying decisions of installed medical equipment from the stage of perception of need through to the final decision to buy.

I am addressing this letter to you because, as the administration in charge of the management of your hospital, you are in the best position and with the most knowledge regarding the process of acquisition of major medical equipment.

Enclosed is a questionnaire being sent to all hospital administrators in the State of Michigan. I would very much appreciate your taking a few minutes of your time to complete and return it to me. The replies are completely anonymous and your answer will be used in the form of aggregate statistical tabulation. Individual answers cannot be traced to any respondents.

Please help me in this effort to contribute to our knowledge of Hospital Management by returning the questionnaire in the self-addressed and stamped envelope, at your earliest convenience.

Sincerely,

Joseph Sachs  
1448 Oakridge Avenue, Apt. 103  
East Lansing, Michigan 48823  
Phone: (517) 355-7540

Enclosure

**APPENDIX D**

**COVER LETTER OF SECOND MAILING**



# MICHIGAN STATE UNIVERSITY

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GRADUATE SCHOOL OF BUSINESS ADMINISTRATION  
DEPARTMENT OF MARKETING AND  
TRANSPORTATION ADMINISTRATION

EAST LANSING • MICHIGAN • 48824

September 26, 1979

A short time ago you should have received a questionnaire on the buying decision process for major medical equipment. If you have already returned the questionnaire, please ignore this letter, and accept my thanks for your assistance and cooperation.

But, in the event you did not see the first questionnaire, I am enclosing another copy. Could you, please, take a few minutes of your time to fill it out and return it in the enclosed envelope?

The purpose of this research is to study the buying decisions of major medical equipment from the stage of perception of need through to the final decision to buy. This same questionnaire has been mailed to all the hospital administrators in the State of Michigan and I am pleased with the excellent response it has had. However, your opinion also is very much needed.

This study is completely anonymous and your answer will be used in the form of aggregate statistical tabulation. The whole research is part of my dissertation to obtain my doctoral degree at Michigan State University.

Your help in contributing to the better understanding of Hospital Administration in general, and buying behavior in particular, is very much appreciated.

Sincerely,

Joseph Sachs  
1448 Oakridge Avenue, Apt. 103  
East Lansing, Michigan 48823  
Phone: (517) 355-7540

Enclosure

**APPENDIX E**

**FINAL QUESTIONNAIRE**

The following set of questions deal with the **last major** purchase of **medical equipment** which you considered to be a large investment made by your hospital.

*Please answer them related only to this last major purchase.*

8. The value of the medical equipment was:

Under \$25,000	<input type="checkbox"/>	\$50,000—\$75,000	<input type="checkbox"/>	\$100,000—\$200,000	<input type="checkbox"/>
\$25,000—\$50,000	<input type="checkbox"/>	\$75,000—\$100,000	<input type="checkbox"/>	Over \$200,000	<input type="checkbox"/>

9. The chart below is designed to ascertain the responsibility of each of the roles of actors previously described with the hospital members who participated in that purchase.

Which of the hospital's members can you identify as taking part in the aforementioned roles. Note that one individual can assume more than one role. *(A checkmark in the box(es) is sufficient).*

Hospital Members Roles	a. Individual Physician	b. Nurse	c. Purchase Agent	d. Engineer	e. Administrator	f. Department Heads	g. Chief of Medical Staff
Influencer(s)							
Buyer(s)							
Decider(s)							
Gatekeeper(s)							
User(s)							

10. Give the number of individuals involved in the decision making process in each of the classes of "hospital members" mentioned in the previous question: *(A checkmark in the box is sufficient)*

	None	1	2-3	4 or more
Nurse(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing Agent(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engineers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administrator(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chief Medical Staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Department Head(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Who was the first to have stated the **perceived need** for this specific equipment? *(More than one answer is possible).*

Chief of Medical Staff	<input type="checkbox"/>	Purchasing Agent(s)	<input type="checkbox"/>	Administrator(s)	<input type="checkbox"/>
Physician(s)	<input type="checkbox"/>	Engineer(s)	<input type="checkbox"/>	Department Head(s)	<input type="checkbox"/>
Nurse(s)	<input type="checkbox"/>				

12. Who **established the specifications** (i.e. the characteristics) of the equipment? *(More than one answer is possible).*

Chief of Medical Staff	<input type="checkbox"/>	Purchasing Agent(s)	<input type="checkbox"/>	Administrator(s)	<input type="checkbox"/>
Physician(s)	<input type="checkbox"/>	Engineer(s)	<input type="checkbox"/>	Department Head(s)	<input type="checkbox"/>
Nurse(s)	<input type="checkbox"/>				

13. Who **identified and evaluated** the various **alternative suppliers** once the specifications had been made? *(More than one answer is possible).*

Chief of Medical Staff	<input type="checkbox"/>	Purchasing Agent(s)	<input type="checkbox"/>	Administrator(s)	<input type="checkbox"/>
Physician(s)	<input type="checkbox"/>	Engineer(s)	<input type="checkbox"/>	Department Head(s)	<input type="checkbox"/>
Nurse(s)	<input type="checkbox"/>				

## QUESTIONNAIRE

### Decision Making Process in Hospital Purchases of Major Medical Equipment

This questionnaire has been designed so that most questions can be answered simply with a check mark.

#### A. General Information

1. What is your title in the hospital?

President	<input type="checkbox"/>	Administrator	<input type="checkbox"/>	Director	<input type="checkbox"/>
Vice-President	<input type="checkbox"/>	Chief Executive	<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>

2. What is your educational background?

Hospital Administration	<input type="checkbox"/>	Registered Nurse	<input type="checkbox"/>	Economics	<input type="checkbox"/>
Physician	<input type="checkbox"/>	Business Administration	<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>
Dentist	<input type="checkbox"/>	Engineer	<input type="checkbox"/>		

3. Your age

Under 30	<input type="checkbox"/>	35-39	<input type="checkbox"/>	45-49	<input type="checkbox"/>	Over 55	<input type="checkbox"/>
30-34	<input type="checkbox"/>	40-44	<input type="checkbox"/>	50-55	<input type="checkbox"/>		

4. Are you a member or officer of the Board of Trustees?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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5. Number of years you have been in the present institution:

Less than one	<input type="checkbox"/>	4-5	<input type="checkbox"/>	6-7	<input type="checkbox"/>	8 or more	<input type="checkbox"/>
2-3	<input type="checkbox"/>						

#### B. General Information on Hospital

6. Number of licensed beds in the hospital:

Less than 24	<input type="checkbox"/>	50-99	<input type="checkbox"/>	200-299	<input type="checkbox"/>	500 or more	<input type="checkbox"/>
25-49	<input type="checkbox"/>	100-199	<input type="checkbox"/>	300-499	<input type="checkbox"/>		

7. Type of Hospital Ownership:

Non government not for profit	<input type="checkbox"/>	Federal government	<input type="checkbox"/>
Investor owned (for profit)	<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>
Local or state government	<input type="checkbox"/>		

#### C. The Buying Process

The literature dealing with organizational buying behavior recognizes the existence of five roles or actors involved in most buying situations. These roles are outlined below:

- Influencer(s) – those members who influence the buying usage decision.
- Buyer(s) – those members with formal authority for selecting the supplier and the terms of the purchase.
- Decider(s) – those members in the organization who have the power to determine the final selection of product or supplier.
- Gatekeeper(s) – those members who control the flow of information regarding the product and/or the supplier into the organization.
- User(s) – those members in the organization who initiate the buying process and who will be using the product.

21. Which of the roles do you believe are relevant for the purchase of bed sheets? *(In your answer you may cover more than one).*

Decider(s)	<input type="checkbox"/>	Influencer(s)	<input type="checkbox"/>	Gatekeeper(s)	<input type="checkbox"/>
User(s)	<input type="checkbox"/>	Buyer(s)	<input type="checkbox"/>	None	<input type="checkbox"/>

22. Which of the roles above would you view yourself as having exercised **most often** during the purchase of the medical equipment:

Gatekeeper	<input type="checkbox"/>	User	<input type="checkbox"/>	Decider	<input type="checkbox"/>
Buyer	<input type="checkbox"/>	Influencer	<input type="checkbox"/>	None	<input type="checkbox"/>

23. Were you involved in each of the stages of the purchasing process?

Yes ☐ No ☐

24. Which was the role you feel **best described** your participation in each of the stages:

Stages	Role		
Perception of the need	Influencer	<input type="checkbox"/>	Buyer <input type="checkbox"/>
	Decider	<input type="checkbox"/>	User <input type="checkbox"/>
	Gatekeeper	<input type="checkbox"/>	I was not involved <input type="checkbox"/>
Specification of the medical equipment	Influencer	<input type="checkbox"/>	Buyer <input type="checkbox"/>
	Decider	<input type="checkbox"/>	User <input type="checkbox"/>
	Gatekeeper	<input type="checkbox"/>	I was not involved <input type="checkbox"/>
Identification of various alternatives	Influencer	<input type="checkbox"/>	Buyer <input type="checkbox"/>
	Decider	<input type="checkbox"/>	User <input type="checkbox"/>
	Gatekeeper	<input type="checkbox"/>	I was not involved <input type="checkbox"/>
Final choice and selection	Influencer	<input type="checkbox"/>	Buyer <input type="checkbox"/>
	Decider	<input type="checkbox"/>	User <input type="checkbox"/>
	Gatekeeper	<input type="checkbox"/>	I was not involved <input type="checkbox"/>

25. What is the ranking of importance you attribute to each of the roles in the purchase of this specific medical equipment (with 1 being most important role and 5 being least important role)? *Assign each of the numbers only once.*

Influencer	Rank # _____	Decider	Rank # _____
Buyer	Rank # _____	User	Rank # _____
Gatekeeper	Rank # _____		

26. Further comments you would like to make on any of the questions/topics discussed in this questionnaire.

14. Who made the final choice and selection of the supplier: *(more than one answer is possible)*.

Chief of Medical Staff	<input type="checkbox"/>	Nurse(s)	<input type="checkbox"/>	Administrator(s)	<input type="checkbox"/>
or Department	<input type="checkbox"/>	Purchasing Agent(s)	<input type="checkbox"/>	Department Head(s)	<input type="checkbox"/>
Physician(s)	<input type="checkbox"/>	Engineer(s)	<input type="checkbox"/>	Board of Trustees	<input type="checkbox"/>

15. How long (in months) did each of the stages take?

a) Perception of need for medical equipment:

Less than a month	<input type="checkbox"/>	3-4 months	<input type="checkbox"/>	7 or more months	<input type="checkbox"/>
1-2 months	<input type="checkbox"/>	5-6 months	<input type="checkbox"/>		

b) Development of the specification of this equipment:

Less than a month	<input type="checkbox"/>	3-4 months	<input type="checkbox"/>	7 or more months	<input type="checkbox"/>
1-2 months	<input type="checkbox"/>	5-6 months	<input type="checkbox"/>		

c) Identification and evaluation of the various alternative suppliers and equipment:

Less than a month	<input type="checkbox"/>	3-4 months	<input type="checkbox"/>	7 or more months	<input type="checkbox"/>
1-2 months	<input type="checkbox"/>	5-6 months	<input type="checkbox"/>		

d) Final choice and selection:

Less than a month	<input type="checkbox"/>	3-4 months	<input type="checkbox"/>	7 or more months	<input type="checkbox"/>
1-2 months	<input type="checkbox"/>	5-6 months	<input type="checkbox"/>		

16. Were there other available alternatives to the equipment purchased which would have served the same purpose?

Yes ☐ No ☐

17. If YES, How many?

Only one ☐ 2-3 ☐ 4-5 ☐ More than 5 ☐

18. Could you rank the criterias used in the final selection by order of importance: *(1 being most important and 6 least important)*

Specification of the equipment	Rank # _____	Price	Rank # _____
Reliability of supplier	Rank # _____	Quality of equipment	Rank # _____
Delivery schedule	Rank # _____	Other _____	Rank # _____
		(please specify)	

19. Was the group of "hospital members" involved in this particular purchase, and which you had in mind when answering the previous questions, always the same in:

	YES	NO
Everything the hospital purchases	<input type="checkbox"/>	<input type="checkbox"/>
Only medical-equipment	<input type="checkbox"/>	<input type="checkbox"/>
Only the purchase of this specific medical equipment	<input type="checkbox"/>	<input type="checkbox"/>
Only the items that require a big sum disbursements	<input type="checkbox"/>	<input type="checkbox"/>
Only non-routine purchases	<input type="checkbox"/>	<input type="checkbox"/>
Is seldom the same	<input type="checkbox"/>	<input type="checkbox"/>
Is never the same	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>
(please specify)		

20. Based on your experience in the hospital, in the case of acquisition, for instance, of a relatively large amount of bed sheets do you believe that the 5 roles (i.e. influencer, buyer, user, decider, gatekeeper) have the same relevance?

Yes ☐ No ☐

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