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ABSTRACT

PURCHASING RESEARCH IN AMERICAN BUSINESS

by Harold Edward Fearon

This study provides new information on staff purchasing research within large American industrial firms. Previously, no extensive data have been available on the use of staff for purchase research, although purchases constitute the largest dollar control element of industrial firms. Staff purchasing research was defined in this study as systematic investigation and fact-finding, by full-time specialists, to improve purchasing performance.

The major hypothesis of this study was that staff purchasing research is an emerging managerial function, exercising an increasingly important influence on materials decisions, and becoming established as an important area of activity within the purchasing department of major industrial corporations. This was substantiated by data from: (1) interviews with ten large firms with staff, and (2) questionnaire responses from 304 of the 500 largest United States industrial corporations.

This study presented detailed data on prevalence of staff, historical growth, objectives, topics researched, benefits, personnel involvement, related administrative activities,

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research administration, data sources, personnel background and compensation, and future growth. Comparisons were made between companies with and without staff, industrial classifications, and company sizes. The literature search revealed: (1) significant, unrecognized early writings (before 1900) on purchasing; (2) two 1928 books emphasizing use of purchase research staff; (3) magazine articles describing company staff purchase research programs were first published in 1946, and have appeared with increasing frequency since then.

Major findings: (1) Purchasing research staffs were used by one-third of the surveyed companies; more durable manufacturers (40%) had full-time staff than non-durable manufacturers (21%). (2) Utilization of staff increased with increased company size. (3) Establishment of staff purchasing research is largely a post-World War II development--87% of staffs were established since 1949; however, one firm established staff as early as 1900. New establishments have approximately doubled every five of the last 15 years. (4) Number of staff research personnel increased with increased number of purchasing personnel, and averaged 7.5 persons per company. (5) Companies with staff researched 1.75 times as many topics as those without staff; each of the 38 topics studied was researched by more companies with staff. (6) Most

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worth-while results were achieved on 1.8 times as many topics by companies with staff. (7) Research by staff produced greater results than research by buyers or administrators. (8) Staff was involved in one-half of topics researched. (9) Staff reduced the percent of topics researched in which buyers and administrators were involved. (10) Staff assisted in purchasing administration. (11) Data sources used by companies with staff were more technical and more numerous. (12) Staff researchers generally are well-educated. (13) Companies with staff evaluated purchasing research more highly and indicated the major benefit was a better buying job. (14) Most companies predicted growth in importance of purchasing research, although those with staff evaluated the future potential slightly higher. Many companies plan to establish a purchase research staff in the future.

In summary, a company properly utilizing a purchase research staff probably will: (1) perform more research, (2) utilize more and better data, (3) improve research results, (4) advance purchasing administration. Evidence collected and analyzed in this study shows that purchasing research staffs are playing an increasingly important role in improving purchasing efficiency.

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PURCHASING RESEARCH IN
AMERICAN BUSINESS

By
Harold Edward Fearon

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PREFACE

A study such as this was possible only with the help of many individuals, too numerous to mention. Particular thanks are due both the National Association of Purchasing Agents and the Purchasing Agents Association of Chicago for the Doctoral Dissertation Scholarships which helped finance this study. Additionally, the time of the many purchasing executives with whom the author discussed ideas, those executives who completed the questionnaire, and especially those executives in the ten companies interviewed (who must remain nameless) is greatly appreciated.

Special thanks are due Professor John H. Hoagland, who, as dissertation chairman, gave generously his time and advice in directing this study. Thanks also are due to Professors Gardner M. Jones and Donald A. Taylor for their valuable suggestions.

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CHAPTER I

OBJECTIVES, NEED, LIMITATIONS OF STUDY

Introduction

The purpose of this study is to provide new information on the staff purchasing research function within the purchasing department of large American industrial firms.

The industrial purchasing function occupies a position of extreme importance and influence in the total operation of a firm, for the average large industrial firm spends approximately fifty percent of its sales dollar for goods and services purchased from others.¹ The purchasing function, the securing of necessary raw materials, supplies, and services to support operations, and the provision for capital equipment acquisitions where deemed necessary, is performed almost universally by personnel within purchasing or procurement departments in all but the smallest of industrial firms. Decisions made in this area, by purchasing executives, determine the direction and flow of a majority of the firm's

¹A survey of the disposition of receipts by the one hundred largest United States non-financial companies in 1958 showed that fifty-four percent of the total receipts from sales in these firms was spent for goods and services purchased from others. In contrast, only twenty-seven percent of sales receipts was spent for wages, salaries and labor benefits. First National City Bank Monthly Letter: Business and Economic Conditions (New York, September, 1959), p. 105.

financial resources and significantly affect the firm's profitability.

In many firms, purchasing represents the largest single dollar control area with which management is concerned. The efficiency with which this department operates, and the resulting effectiveness of its decisions, easily can mean the difference between a firm's ability to prosper within a competitive economy, or to operate with only a minimum of financial success, or even to cease existence entirely.

The basis for the purchasing executives' decisions on purchased commodities and sources of supply, as well as those pertaining to internal department operating procedures, is information about possible alternatives and calculated consequences. When purchasing raw materials and products the purchasing executive's decision will be based on estimates and information on such aspects as various suppliers' ability and willingness to deliver a satisfactory product, suppliers' probable production costs and amount of competition existing between potential suppliers, various suppliers' marketing strategies and goals, present and future supply availability and competing demands for the materials, likelihood of disruption of supply, relative transportation advantages, and possible material alterations or substitutions.

The final raw material purchase decision is based on a complex of factors, and the more and better information the purchasing executive has available, the more likelihood there is of reaching an optimal decision. This same reliance upon, and determinancy of, reliable information as a basis for decisions exists for the other purchase categories with which the purchasing executive is concerned. Additionally, the efficient administration of the internal operations of the purchasing system depends on information, analysis, and evaluation of possible alternatives, their repercussions on other, related functions of the firm, and their overall potential costs and benefits.

The scope of the decisions made by the purchasing executive demands personnel with an analytical ability and a management perspective, if full potential is to be realized from the purchasing function.

The efforts made in acquiring adequate information, and the subsequent analysis of such information as is necessary to allow proper selection from alternative courses of action, may be termed purchasing research. Undoubtedly, each buyer, or purchasing administrator, should in the course of each day's work spend time in gathering and analyzing facts, as a basis for decision making.

Within recent years a trend seems to have been developing toward the establishment of full-time specialists within the purchasing department to perform a staff function of collection and analysis of data pertinent to purchasing decision making. Ford Motor Company was the first company to receive considerable amounts of publicity on their method of staff organization to do purchasing research, when in the late 1940's they established a Purchasing Analysis Section within their purchasing department.² General Electric Company established a staff Value Analysis Department in 1949,³ and a Purchasing Research Department was established at United States Steel Corporation in 1952.⁴ Conversations with industrial purchasing executives indicate a growing interest in, recognition of, and establishment of, the staff purchasing research function.

Need for Study

The use of staff personnel within an organizational structure to facilitate the work of the line personnel in performance of the primary duties of the organization is a well accepted

²Albert J. Browning, "Purchasing--A Challenge and an Opportunity," Purchasing, XXIII (December, 1947), pp. 99-101.

³"Value Analysis . . . a purchasing technique that is saving hundreds of thousands of dollars each year for the General Electric Company," Purchasing, XXVIII (June, 1950), pp. 94-101.

⁴J. B. Delaney, "Purchasing: Research Gets Staff Status in Broad Program of U.S. Steel," Iron Age, CLXX (December 11, 1952), pp. 95-96.

practice. A considerable body of literature exists on the use of staff personnel within an organization.⁵ One of the frequent uses of staff personnel is to perform various research functions. The staff research function as one of three primary uses of staff personnel was commented on by one author as follows:

Because of its technical research nature, this group of staff services usually has its contact with a special aspect of the management process. Research in materials, products, facilities, and people, both basic and applied, are included in this group. Examples are plant development, product development, materials analysis, and social science and market research.⁶

Studies have established that staff personnel frequently are used for performance of research in such functional areas as marketing and personnel,⁷ but no comparable studies have

⁵ See, for example, Ernest Dale, Planning and Developing the Company Organizational Structure, Research Report No. 20 (New York: American Management Association, 1952), pp. 67-83; Improving Staff and Line Relationships, Studies in Personnel Policy No. 153 (New York: National Industrial Conference Board, 1956), 99 pages; Organization of Staff Functions, Studies in Personnel Policy No. 165 (New York: National Industrial Conference Board, 1958), 104 pages.

⁶ Robert C. Sampson, The Staff Role in Management (New York: Harper and Brothers, 1955), p. 45.

⁷ See, for example, Richard D. Crisp, Company Practices in Marketing Research, Research Report No. 22 (New York: American Management Association, 1953), 63 pages; A Survey of Marketing Research: Organization, Functions, Budget, Compensation (Chicago: American Marketing Association, 1958), 92 pages; James Graham Jones, Jr., "A Situational Analysis of the Scope, Organizational Structure, and Function of Personnel Research in the Manufacturing Industry" (unpublished Ed.D. dissertation, Wayne University, Detroit, 1955), 147 pages.

been done on the employment of such staff personnel in the functional area of purchasing. There is a need for information on this important aspect of the performance of the purchasing function within industrial firms.

Available information on the staff purchasing research function consists largely of magazine articles scattered in the trade journals. These articles have appeared with increasing frequency in the last five years but, although useful in presenting information on purchasing research practices in specific companies, do not attempt to assess the prevalence and activities of the staff purchase research function in any large segment of American industry. Little information of an aggregate nature is available on staff purchasing research practices.

The purchasing function is, justly, receiving increasingly greater amounts of attention by both business managers and business scholars. One indication of this attention is the number of publications on purchasing and materials management released in the last three years by the American Management Association--more than published in all prior years combined. Additionally, a formal Purchasing Division was established within the American Management Association in 1961.

The reasons for giving increasing attention to various aspects of improvement of purchasing efficiency within the firm

are many. It is difficult to realize that the purchasing function has not received more attention in the past, when one considers the influence that the actions of industrial purchasing executives have on the overall efficiency of the firm and the economy.

Considering the importance and potential contribution of the purchasing function, it is one of the last relatively unexplored frontiers in industry's quest for greater efficiency. Advances in our knowledge of this function, its performance, and potential, portend sizeable benefits to industrial concerns, through increased efficiency; to consumers, through provision of better products at lower prices; and to the economy as a whole, through more efficient utilization of our natural and human resources. It is felt that the information this study will present on the staff purchase research function will provide a contribution to the advancement of purchasing knowledge.

Definition of Staff Purchasing Research

For the purposes of this study, staff purchasing research is defined as systematic investigation and fact finding, by staff specialists, undertaken to improve purchasing performance.

These staff specialists doing research on the purchasing function are located, organizationally, within the purchasing department and devote the majority of their time to the

provision of data required by buying and administrative personnel performing the purchasing function. While staff personnel doing work of a purchasing research nature may be referred to in different organizations by such titles as "Purchase Researcher," "Value Analyst," "Purchase Analyst," or "Purchasing Consultant," the important qualification for this study is that they are full-time employees within the purchasing organization, devoting the majority of their time to duties of a research rather than a buying or administrative nature.

While it is recognized that much purchasing research might be done by buying or administrative personnel within the purchasing department, this study will concentrate on an analysis of purchase research work done by specialized staff personnel. Some data will be presented on purchasing research done by buyers or administrators, but this is not the primary purpose of this study. The data on purchasing research performed by buyers or administrators is presented mainly to permit comparisons of research done by companies with staff and that done by companies without staff, and to compare results of research done by staff personnel with results of research done by others within the purchasing department.

Hypotheses

The major hypothesis of this study is that the staff purchasing research function is an emerging managerial function, exercising an increasingly important influence on materials decisions, and becoming established as an important area of activity within the purchasing department of major industrial corporations in the United States.

To substantiate this general, overall hypothesis, the following more specific hypotheses will be tested by this study:

1. The staff purchase research function has been established in a substantial number of the 500 largest United States industrial firms.
2. The utilization of a purchase research staff is related to company size.
3. The staff approach to purchasing research has been largely a post-World War II development.
4. The number of personnel in a staff research capacity within the purchasing department is related to the total number of personnel within the purchasing department.
5. Companies with a staff purchase research function do more research and produce more worth-while research results than companies without a staff purchase research function.

6. The results of research done by staff purchase research personnel are valued more highly than research done by buyers or administrators within the purchasing department.

7. In companies with a purchase research staff, that staff alone does the complete research on many of the subjects researched.

8. The utilization of a purchase research staff assists buyers and administrators, by relieving them of certain research duties.

9. Frequently staff purchase research personnel are involved in activities of an administrative nature, in addition to research duties.

10. Companies with a purchase research staff employ a larger number of data sources in developing information necessary for purchasing research, than are employed by companies without a purchase research staff.

11. The individuals employed in a staff purchase research capacity represent a high level of educational achievement, in terms of numbers holding college degrees.

12. Companies with a purchase research staff evaluate the general benefit received from all types of purchasing research more highly than companies without staff.

13. Companies with a purchase research staff evaluate the future growth potential of purchasing research in their companies more highly than those companies without staff.

Objectives of This Study

The purpose of this study is to establish, based on evidence gathered by personal interviews and a mail questionnaire, the position, scope, and benefits of the staff purchasing research function within the 500 largest United States industrial firms. In order to test the hypotheses of this study, information will be presented on the following aspects of purchasing research in major industrial firms in the United States:

1. Prevalence of the staff method of organization for performance of purchasing research.
2. Historical growth of staff purchasing research.
3. Numbers of personnel employed in a staff purchase research capacity.
4. Reasons for establishment of staff positions, and the stated objectives of the staff purchase research function.
5. Subject areas in which research is done.
6. Evaluation of results of purchasing research.
7. Procedures used to administer the staff purchase research effort.
8. Data sources used in purchasing research.

9. Methods used to calculate benefits from staff purchase research activities.

10. Background and compensation of personnel employed in staff purchase research positions.

11. Future growth of staff purchasing research.

Limitations of This Study

1. Only Large Industrial Firms Included: Data have been gathered on the purchasing research practices of only the 500 largest United States industrial firms. No information is included on small or medium size firms' purchase research practices, or on purchase research practices in utilities, transportation concerns, government agencies, or financial concerns. The results of this study should not be accepted as typical of American industry, but only of large industrial firms.

2. Interview Sample: Most of the data on research methodology, operating procedures, specific research projects, methods of organization, methods used to evaluate results of research done, and backgrounds of personnel employed in staff research positions, were obtained from the ten companies personally visited. The companies interviewed were not randomly selected from the 500 largest United States industrial firms, but instead only firms which utilized staff purchasing research personnel were interviewed.

3. Confidential Nature of Data: Information on specific company practices cannot be as complete as the reader might wish, due to the confidential nature of the data. The identity of specific companies has not been disclosed, and in some instances minor alterations have been made in the description of specific research projects to preserve the anonymity of companies furnishing data. No substantial changes in the content of the data were made.

4. No Evaluation of Specific Companies: While an attempt will be made, based on the results of the questionnaire, to evaluate the results achieved through utilization of a research staff, no attempt will be made to evaluate, in terms of desirability or adequacy, the efforts and methods used by the specific concerns interviewed.

Organization of Study

Chapter II presents an examination of early literature on the purchasing function, undertaken to provide a background for this study. Chapter III surveys the available literature on the use of staff personnel for the performance of purchasing research and indicates information on this subject which is available from other studies. The description of the methodology used to gather data upon which this analysis of staff purchasing research was made is discussed in Chapter IV, and the limitations of these data are pointed out.

Chapter V presents information on the prevalence of the staff purchase research function, its historical evolution, and the number of personnel engaged in this function. Additionally, information on the organization of staff purchasing research in the companies interviewed is presented in this chapter. Chapter VI presents a summary of the findings from the mail questionnaire on research done, the evaluation of research results, and the involvement of personnel in research in the 500 largest United States industrial firms. Chapters VII, VIII, and IX present, respectively, a detailed analysis of the major categories of Research on Purchased Materials, Products, or Services; Research on Vendors; and Research on the Purchasing System. Examples of specific research projects in the companies interviewed are presented as illustrations of the research on the specific topics in each category. Chapter X presents an analysis of related activities performed by staff purchasing research personnel and the data sources used in the purchasing research.

The methods and procedures used in administration of staff purchase research activities in the companies interviewed are presented in Chapter XI. Information on the educational background, experience, and compensation of staff research personnel in the companies interviewed is presented in Chapter XII.

Chapter XIII presents an analysis of the benefits, difficulties, and future of the staff purchasing research function, and Chapter XIV presents the the summary and conclusions of this study.

CHAPTER II

HISTORICAL DEVELOPMENT OF PURCHASING

Introduction

As a background for the study of the staff purchasing research function, an examination of early literature on the purchasing function was undertaken. An attempt was made to document the development of early literature on purchasing, to determine the concepts of early authors on the subject of purchasing, and to highlight the types of problems, and recommended courses of action, pointed out in this early literature. Although the popular current textbooks indicate that interest in the purchasing function is thought to be a twentieth century development,¹ this was found to be contrary to fact.

¹For example, following are quotations from three of the current textbooks:

"Only during the last fifty years has purchasing come to be recognized as a separate and important sphere of business management The first book devoted specifically to the purchasing function was published in 1911 Even in this book purchasing did not receive full recognition since the author . . . entitled his book The Supply Department.

"At about the same time occasional articles began to appear in some of the technical trade publications dealing with some of the aspects of purchasing." J. H. Westing and I. V. Fine, Industrial Purchasing (2nd ed.; New York: John Wiley and Sons, Inc., 1961), p. 3.

"A recognition of industrial procurement as an important business function was first forced upon industry during World War I." Howard T. Lewis and Wilbur B. England, Procurement:

This section presents, chronologically, the early writings which were found on the subject of purchasing. Magazine articles are reviewed through the year 1910, by which year such articles were appearing rather frequently. Books on purchasing are reviewed through 1928, in which year two books appeared which made strong recommendations for the establishment of staff research personnel within the purchasing department.

This search of early literature on the purchasing function was not exhaustive, as this was not the primary purpose of this present study. The early literature does point up that the purchasing function was established as an important area of activity, and was being written about, much earlier than is commonly assumed. Further research on the historical evolution of the purchasing function is needed.

Literature Prior to 1900

One of the early classic books in management provides evidence that purchasing was established as a separate function

Principles and Cases (3rd ed.; Homewood, Illinois: Richard D. Irwin, Inc., 1957), Preface.

"Procurement has only recently become an important and correlated function of management. It was unusual indeed, prior to World War I, for purchasing to be ranked as an independent activity World War I forced top management's attention to the buying function World War II really established procurement as a major function of management." Henry G. Hodges, Procurement: The Modern Science of Purchasing (New York: Harper and Brothers, 1961), p. 1.

over 100 years ago. The second edition of Charles Babbage's book, On the Economy of Machinery and Manufacturers (1832), made reference to the purchasing function in two places. In discussing the organization of duties for a mining concern, one of the ten officers responsible for governing the operations of the mines was "A materials man [who] selects, purchases, receives and delivers all articles required."² Later he mentioned, "It will have been found necessary to establish an accountant's department . . . and this department must be in communication with the agents who purchase the raw produce . . . ," and in describing the importance of the division of labor he further noted that "a great reduction in the cost of the article which is brought to market" can be accomplished by utilizing "the precise amount of skill . . . necessary for the execution of each process . . . [and] throughout every stage . . . from that in which the raw material is procured, to that in which the finished produce is conveyed into the hands of the consumer"³

Another of the references made to purchasing before the turn of the century was in an 1870 trade magazine article entitled "Purchasing Building Materials," which pointed out

² Charles Babbage, On the Economy of Machinery and Manufacturers (2nd ed.; London: Charles Knight, 1832), p. 202.

³ Ibid., p. 216.

that through judicious purchasing a firm may be able to effect substantial savings in total production costs:

After a bill of the necessary amount of lumber has been prepared, it will be found an economical practice to communicate with lumber dealers in various parts of the country, for the purpose of determining the price for the kinds of lumber required. In this way a shrewd and judicious builder or buyer may often save from twenty to fifty per cent in the price of his lumber. For example, if an elegant suburban villa were to be erected in the vicinity of New York City, and it were desirable to procure first-rate lumber at the lowest cash price, it would be well to communicate with dealers of lumber in Maine, Georgia, Virginia, or other localities from which the market is supplied with cheap and choice lumber. By addressing postmasters, editors of certain papers, or some other persons in those localities where large quantities of lumber are sawed, it will not be difficult to come into communication with reliable dealers, who would respond to a bill of lumber with satisfactory promptness.⁴

It appears that interest in, recognition of, and writings specifically about the purchasing function in the area of railroad management preceded the same interest, recognition, and writing in the industrial field. This early interest in railroad management can probably be explained in part by the fact that railroads were among the largest types of business organizations in the latter half of the nineteenth century.

The first book found devoted exclusively to the purchasing and materials functions was written by Marshall M. Kirkman, Comptroller of the Chicago and Northwestern Railroad, and

⁴"Purchasing Building Materials," The Manufacturer and Builder, XI (February, 1870), p. 57.

appeared in 1887. This book, The Handling of Railway Supplies--
Their Purchase and Disposition,⁵ was concerned with the purchasing functions of railroad organizations.

In introducing this book, Kirkman emphasized the importance of the purchasing function to the management of a railroad, and the lack of knowledge on the subject as follows:

The intelligence and fidelity exercised in the purchase, care and use of railway supplies, influences directly the cost of construction and operating, and affect, therefore, the reputations of officers and the profits of owners. Accounting officers are also interested in the subject, as it is connected with the details of their office. To many (perhaps the bulk of railway officers) the handling of railway supplies is an unknown quantity. The subject needs elucidation on many accounts.⁶

Kirkman advocated that a purchasing agent be employed, if a railroad was to most advantageously perform the purchasing and materials functions, and pointed out the difficulties which arose when the purchasing function was not centralized under one individual, as the following quotation shows:

The purchase of goods embodies many varied talents and experiences. The ability to buy advantageously, depends largely upon the knowledge of men possessed by the purchaser and his skill in taking advantage of this knowledge. His value will, moreover, be dependent upon the discretion allowed him, and his judgment in exercising it. The position also requires technical skill. The person filling it must be experienced, otherwise his acts will not command the confidence or respect of his associates.

⁵ Marshall M. Kirkman, The Handling of Railway Supplies--
Their Purchase and Disposition, (Chicago: Chas. N. Trivess, 1887), pp. 223.

⁶Ibid., Preface.

His wisdom and fairness must be such that if he selects material contrary to the requisition made upon him, the person thus over-ruled will tacitly acquiesce therein and abide by the demonstration of its wisdom afterwards. Unless the operating officer has this respect for the purchaser, he will quite likely not use the article thus bought, or, if he does, will not give its advantages fair expression.

The assistance that an experienced purchasing agent can extend to his associates is hardly to be estimated. His duties not only familiarize him with all new devices, but his observation enables him to point out those most likely to lessen expenses or add to the efficiency of a property.⁷

Kirkman indicated that not all railroad organizations had seen fit to centralize the purchasing function under a purchasing agent, and commented that only with the services of a purchasing agent will the purchasing function be efficiently discharged, as the following quotation shows:

The practice of designating a particular person to buy the supplies that a railway company needs, is not universal, though more prevalent than formerly. At one time it was the custom to permit the various heads of departments to buy. The practice was based upon the presumption that they knew better than anyone else and that their knowledge of the technicalities connected with the thing they wanted made them especially fit to buy advantageously. The argument was, however, fallacious It was found, moreover, that when purchases were thus distributed, those making them were in many cases constrained to look upon the act as merely an incident of their office, something in the nature of a perquisite which they were at liberty to avail themselves at pleasure. It resulted from this that excesses grew up where purchases were not supervised by an alert and trustworthy manager. There was, moreover, enormous waste of material

⁷Ibid., p. 40.

through excessive purchases and duplication of orders, while prices became greatly inflated through the ignorance and veniality of purchasers.⁸

Kirkman also commented on the lack of attention often given to the selection of personnel to fill the position of purchasing agent, and deplored such casual selection of persons for such an important position:

The great benefits that accrue to a railroad from a good purchasing agent are not so generally esteemed as they should be. Judging from the changes that occur, continuance in office is not thought to be a matter of especial importance . . . the place is too often looked upon as one that any man with ordinary intelligence can fill acceptably; a position at once agreeable and measurably lucrative, but not of great importance. No greater mistake could be made To be able to buy its supplies at the lowest possible figure is of enormous value to a company, and a capable purchasing agent, it is probable, can save his employer a greater sum through the exercise of experience and intelligence, than any other officer of like grade.⁹

Further indications of this early interest by railroad organizations in the purchasing function are provided by trade journals in the railroad field. In 1890, three issues of The Railroad Gazette contained articles on the purchasing function, which discussed the organization of the purchasing function and the duties of the purchasing agent, benefits of standardization and determination of amounts of materials and supplies to stock,

⁸Ibid., p. 42.

⁹Ibid.

and the disposition of surplus.¹⁰ The 1898 volume of this same journal contained no less than seven articles, or letters to the editor, on the subject of purchasing. One article contained abstracts from a paper by the Purchasing Agent and Superintendent of Tests, Long Island Railroad, presented at the October 1898 meeting of the New York Railroad Club, which indicated that the purchasing job should not be a clerical function. The duties and qualifications of the position were stated as follows:

The Purchasing Agent should be something more than a mere price clerk . . . he should, before he is competent to hold this responsible position, become familiar with the different classes of supplies used in all departments . . . post himself as to the different kinds and qualities of railroad supplies on the market, with which object some study of the processes of manufacture at the mills and factories is of great advantage, so that he may be able to select his supplies with some judgement, and not make the selection depend solely on price¹¹

The following statement regarding the problem of buying tools that appeared in an 1892 issue of one of the engineering publications might still be applicable to some firms today:

If a person, when he wants a machine tool, could wait six months for it, until he could examine all that are made of the kind he desires, he would then be able to

¹⁰"Purchasing and Care of Supplies," The Railroad Gazette, XII (February 14, February 21, March 14, 1890), pp. 105-06, 126-27, 172-73.

¹¹"The Purchase and Inspection of Railroad Supplies," The Railroad Gazette, XXX (October 28, 1898), p. 777.

select the best, if his judgment could be trusted to tell what is best after so prolonged a siege. Now most tools are selected quickly, because they are needed at once, and what appears to be the best is taken and set to work. Hence many poor tools are got where better ones could and would be taken if more time for investigation were had. There are of course establishments where the most suitable tools are selected and recommended by experts, and a few of these deserve all praise for candor and fairness, but many of them do not push forward the best tools, but advocate instead those most profitable to them as dealers, and if a buyer falls into the hands of such he may suffer for it. There seems to be a need of a more perfect means by which buyers can be made to know the comparative capacities and value of machine tools, so that when they need such tools they may not be in any great doubt as to that which is nearest to their wants.¹²

The following two quotations from the early 1890's pointed out the importance of the buyer's position within an industrial firm and the misuse of this position:

I don't know what the machine business is coming to. Generally when a big company is formed, a favorite or a relative of some member is made buyer, and the drummer who can talk the smoothest sells his goods. I tell you, sir, if there is one place more than another in a large concern that requires an honest, shrewd, experienced, practical man to make money in, it is the buyer's.¹³

The greatest fault practiced by impractical buyers is that of initial cheapness. To such a person oil is oil and coal is coal, irrespective of the quality or the source of the product. The cause of their being impractical buyers is that old cause, "talk is cheap," and the fluent person often gets a position he is qualified by neither nature or experience to fill.¹⁴

¹²"Machine Shop Notes," The Engineering Magazine, IV (December, 1892), p. 477.

¹³Ibid., p. 478.

¹⁴"Machine Shop Practice," The Engineering Magazine, VI (October, 1893), p. 114.

J. Slater Lewis, in his book The Commercial Organization of Factories which appeared near the close of the century, provided some useful ideas on the organization of industrial establishments. In his "Staff Organization Diagram" he included the position of a "Suppliers Order Clerk" reporting to the "General Manager."¹⁵ The importance of proper attention to purchasing in the successful administration of a factory was shown by the following comments:

The Manager, too, must know the best markets for purchasing materials, and be fully alive to all the tricks and dodges of each class of trader.¹⁶

The economical purchasing of stores is one of the most important factors in the successful administration of a manufacturing establishment Stores cannot, of course, be purchased advantageously without that particular shrewdness which is characteristic of a successful buyer; and no system of bookkeeping, however complete, can possibly dispense with that personal quality. But at the same time a complete record of prices and tenders received from time to time, and an orderly and methodical system of requisitioning . . .¹⁷ are essential to the economical purchasing of stores.

The lowest price is not by any means always the cheapest, and this remark applies not only to heavy goods, but to the lightest possible articles. For instance, a crank forging may be offered at such a low price that the buyer is tempted to give the order. He discovers, however, when the forging arrives, that in consequence of its rough and lumpy conditions he not only has to pay more for the forging per se in consequence of its unnecessary and

¹⁵ J. Slater Lewis, The Commercial Organization of Factories (London: E. & F. N. Spon, 1896), pp. 474-75.

¹⁶ Ibid., p. 8.

¹⁷ Ibid., p. 54.

abnormal weight, but that the extra labor involved in machining down to dimension is out of all proportion to the benefits accruing from the supposed bargain in first cost.¹⁸

Many of Lewis' ideas are still appropriate today. The development of specialists in purchasing did not, however, seem to be as highly developed as it is today, for Lewis pointed out:

The Works Manager should be consulted in regard to the purchase of all material used in the works. In some instances the whole of the purchasing operations may with advantage be left to him It is, nevertheless, very important that the authority for purchasing be kept within strictly defined lines, and only exercised by officials who have been duly authorized, and who clearly understand what they are doing.¹⁹

Literature, 1900-1910

Around the turn of the century articles specifically on the industrial purchasing function began appearing in some of the engineering magazines. As already noted, articles on railroad purchasing had appeared earlier in some of the railroad journals.

Hugo Diemer, a professor of engineering and a prolific contributor to various engineering publications, in 1900 wrote an article entitled "Functions and Organization of the Purchasing Department," in which he made several comments concerning the functions of this department, the qualifications

¹⁸Ibid., p. 108.

¹⁹Ibid., p. 132.

personnel in purchasing positions should possess, and the paper work to facilitate performance of the function.²⁰

Regarding the qualifications necessary for performance of the purchasing job, and selection of buyers, Diemer commented:

The successful accomplishment demands that the purchasing agent shall be a man who has a working knowledge of the particular industry for which he is to buy material

To salesmen, the ignorant, affable young clerk who has been promoted to the position of purchasing agent is a familiar type. He is frequently the cause of a salesman's prolonging his stay in a city several days, until finally he sees the man with whom he can have an intelligent conversation. It is quite evident that, where this is the case, the young man is a hindrance from an economic standpoint, since the additional cost of sales departments on account of prolonged stays is sufficient to increase materially the unnecessary expense connected with the placing of an article on the market.

The securing of the most desirable delivery involves a knowledge of business methods and forms in which, unfortunately, purely technical or shop men have generally had but little training; and this fact is the excuse for the common practice of appointing, as purchasing agents, clerks who have had but little technical or shop knowledge.²¹

On the subject of price, Diemer commented:

As to the third function of the purchasing department, that of securing good terms and low prices, much depends upon the shrewdness and tact of the purchasing agent. Courteous attention to salesmen is always desirable, and can be accorded without loss of time if nothing but strictly business conversation is indulged in.²²

²⁰ Hugo Diemer, "Functions and Organization of the Purchasing Department," The Engineering Magazine, XVIII (March, 1900), pp. 833-36.

²¹ Ibid., p. 833.

²² Ibid., p. 836.

Diemer concluded his article with a statement of the buyer's workload, which by today's standards might be considered excessive, if the buyer was doing a thorough, analytical job of purchasing:

All of the above systems can be successfully conducted by a purchasing agent with a competent stenographer as assistant, and he will need no other help if his orders do not exceed fifty or sixty a day.²³

The importance of material specifications to the determination of total production costs was the subject of certain short articles which appeared around the turn of the century.²⁴ These articles concentrated mainly on the engineer's responsibilities in specifying materials, and contained many of the suggestions found in today's literature on value analysis. The following quotation is typical of these early writings on material specifications:

Good judgment and common sense are matters of primary importance in drawing up an engineering specification. The purpose of such a document may be said to be the attaining of a certain result for the least amount of money compatible with proper execution of the work involved; but curiously enough, the stipulations sometimes made in a specification, defeat that very object. An excellent illustration of this point was given recently by . . . [who] told of a specification for an engine received by his firm some time ago which was so overloaded with what might be called fads, or, at any rate, with what might quite well have been dispensed with, and consequently

²³ Ibid.

²⁴ See, for example, "Current Topics," Cassier's Magazine, XXIV (June, 1903), p. 176; and XXVI (September, 1904), p. 507.

contained so many names of persons who were to supply particular pieces, that the price was enormously increased.²⁵

An article, in part concerned with the purchasing function, appeared in The Engineering Magazine in 1903.²⁶ This article was largely concerned with systems necessary for the accounting of, and payment for, materials entering the factory, and viewed the authority of the purchasing agent as quite limited:

The volition and discretion of the purchase agent extend only to an examination of sales agent's samples, and a recommendation of them if satisfactory to him. If satisfactory also to the department of the plant, then the quotation goes on the proper card, and the purchase agent can select his vendor, unless he is directed where to place the order.²⁷

In 1905, in introducing another article on purchasing, the editors of The Engineering Magazine said:

The Engineering Magazine has been the source of much of the existent literature dealing with the organized study and management of two of the great elements in the economy of manufacturing-- labor and general expense. We believe it will be of interest to supplement these with a further study of the application of scientific business methods not only to the internal handling, but also to the supply, of the third prime factor in manufacturing-- materials-- The Editors.²⁸

²⁵"Current Topics," Cassier's Magazine, XIV (April, 1901), p. 508.

²⁶Horace L. Arnold, "Purchase by the Organized Factory," The Engineering Magazine, XXV (June, 1903), pp. 399-408.

²⁷Ibid., p. 402.

²⁸William D. Ennis, "The Relation of Purchasing to Production," The Engineering Magazine, XXIX (July, 1905), p. 519.

This article, although largely concerned with the forms and records used to facilitate purchases, took a somewhat larger view of the purchasing function and the responsibilities and work of the buyer than the 1903 article previously quoted. Appropriate quotations on the responsibilities of the buyer follow:

Assuming that the works superintendent is responsible for the consumption of materials per unit of output, while the business manager is accountable for the cost thereof, there appears a necessity for a third element in industrial organization, having jurisdiction over the prices paid for materials. This is the function, as usually understood, of the buyer. He is technically differentiated from both superintendent and manager, bearing no formal responsibility regarding the consumption of materials, either absolute or in proportion to production; nor, usually, regarding the costs per unit of production, so long as the prices paid are low. This strict limitation of the accountability of the purchasing department is, and should be, never adhered to. Properly considered, buying has other relations intimately associating it with considerations of production-intensity and profit, the nature of these relations, and their utility, depending upon the kind of industry and its mode of organization.²⁹

Ennis also referred to the need for price knowledge and determination of price by the buyer, as follows:

. . . there should be intelligently designed records showing the variations in prices of the principal supplies purchased, accompanied by thorough analyses showing the reasons for the variations. Any opportunity for comparisons of prices with those paid for the same materials by others should be taken advantage of, and the facts recorded. To be most familiar with the markets, the buyer should be supplied not only with his own trade papers, catalogues and

²⁹Ibid., p. 519.

other publications, but also with the trade papers covering the markets he most often enters.³⁰

Ennis also referred to the need for specialization within the purchasing department, and recommended:

Where the organization is large, so that the personal attention of the buyer cannot be given to the details of all purchases, the materials should be grouped in general classes and each class handled by one subordinate. Special knowledge is just as essential in purchasing as in manufacturing.³¹

He also commented on the organizational centralization of the purchasing function in large, multi-divisional companies:

In the recent "integrated" mode of organization of many industries, involving the combination under one direction of a number of geographically separated plants, it has seemed wise to form a new basis for buying, consisting in the establishment of a central purchasing department, which takes direct charge of the buying of the larger and repetitional items, supervising at the same time the local purchasing of smaller items at the various plants³²

The lack of attention given by some managements to purchasing was pointed up by another 1905 article. Before discussing the necessity for system and records in purchasing, the author commented that the purchasing department

. . . is usually the last to pass from under the personal control of the proprietor of the firm.

³⁰ Ibid., p. 528.

³¹ Ibid.

³² Ibid., p. 539.

There are many concerns that have found it necessary to secure experienced men from outside for their manufacturing and sales departments, and yet are satisfied to run their purchasing department in the same old way These things show that the mass of business houses have not yet discovered the fact that their purchasing department needs the application of modern methods of business economy.³³

In 1905 the second book specifically devoted to the purchasing function, and the first book on other than railroad purchasing, was published, as one of the volumes in a home study series. Book on Buying contained eighteen chapters, each by a different individual.³⁴ The first part of the book (pp. 1-80) was concerned with the "principles" of buying, while the second part (pp. 81-216) consisted of eleven chapters describing the forms and procedures used in various company purchasing systems. This book was introduced by the statement that too little attention had been paid to the purchasing function in the past:

But little attention has, up to this time, been paid to the science of buying; this too, in the face of the fact that there is no department that contributes any more to the success of a business than that concerned with the purchase of material, stock, and supplies.

³³ Harold A. Wright, "The Fine Art of Buying," The World's Work, X (July, 1905), p. 6439.

³⁴ H. T. Kett, et al., Book on Buying ("The Business Man's Library," Vol. V; New York: The System Company, 1905), 216 pages.

When it is considered, that buying requires not only keen, shrewd, business judgement, but also a vast amount of technical knowledge compactly arranged, it is evident that the systematization of the department of purchasing,³⁵ too, is worthy of careful research, study, and treatment.

Book on Buying makes several comments on the effects of the performance of the purchasing function on the success of a business, two of which follow:

The secret of the great importance of good buying lies here: The buyer looks always to the profits of the concern which he represents Here is the first place at which profits may be made. Here is the first place in business organization that ability may be shown.³⁶

In every line of business dependent upon selling, the importance of good buying is adequately recognized. While there is a tendency on the part of the salesman to define his work as that of the man "who keeps the smoke coming out of the factory chimneys," and to always carry the idea that he is on the end that brings in the money, yet the relative importance of selling and buying is no more clearly shown than by the fact that incompetence or inability on the part of the salesman may bankrupt his firm; on the part of the buyer it is sure to.³⁷

In discussing the knowledge and skills required to do an adequate purchasing job, Book on Buying gave much emphasis to what it called "knowledge of the market":

Nor is knowledge of prices more than a beginning of knowledge of market. The mere fact that a certain price rules is no sure guide. The shrewd buyer must look beyond the mere price and must reach into the causes which have made that price, and those that are material in its remaining at that point, or in causing its fluctuation up or down.³⁸

³⁵ Ibid., p. 3.

³⁶ Ibid., p. 23.

³⁷ Ibid., p. 32.

³⁸ Ibid., p. 12.

This book emphasized the advantage to the buyer of knowledge of production processes, and suggested means by which the buyer might keep himself current on this subject:

A knowledge of the various processes of production--particularly for the buyer of a special line--is at all times of importance. Owing to the great number of processes to which even the simplest products are now often subjected, it is not possible for the general buyer to keep himself thoroughly posted on this important requirement. But the buyer of a restricted line can at all times inform himself through the traveling trade or technical journals, and from other sources as to the present day methods and processes.³⁹

The concluding chapter introduced the possibility of combining several of the materials functions under the responsibility of the purchasing agent, which is similar to the materials management concept so widely discussed today:

It is now the common practice in by far the larger percentage of manufacturers and works to keep separate the purchasing agent's duties as follows:

- (1) Purchasing of raw material.
- (2) Storing of raw material
- (3) Stocking of finished components.

Where conditions are as have been treated before in this article, it will be found that by combining in one department these various functions, that not only will factory organization be furthered but the resulting benefits of good factory organization will accrue.⁴⁰

Other articles on the subject of purchasing appeared after 1905, in the various engineering journals. The Engineering Magazine (which in November 1916 was re-titled

³⁹ Ibid., p. 29.

⁴⁰ Ibid., p. 195.

Industrial Management) appears to have carried the majority of such articles.⁴¹ These articles were primarily concerned with the forms and records which made up the systems used in purchasing.

Cassier's Magazine first published an article specifically on purchasing in 1908,⁴² which described the effect in one company of changing the responsibility for supervision of the purchasing function from clerical to engineering personnel, and concluded:

The purchasing agent alone determined where the orders were to be placed for all goods, which discretion he exercised to the best of his ability, having absolutely no friends to please in the trade, and being under no obligations whatever to favor anyone more than another. Nor did the foremen or heads of departments undertake to specify when making out their requisitions whose make or brand of goods should be used.⁴³

In 1908 The Engineering Magazine began a series of articles on the organization for production of manufacturing companies. From these articles the organizational level which the

⁴¹The Engineering Magazine contained the following articles: J. Cecil Nuckols, "A Complete System for the Purchasing Department," XXXV (April, 1908), pp. 26-32; A. C. Ward, "The Purchasing Department of a Manufacturing Organization," XLVI (December, 1913), pp. 349-55; Herbert R. White, "Records for the Purchasing and Supply Department," XLVI (January, 1914), pp. 571-76; William H. Morse, "The Purchasing Agent and High Class Product," XLIX (June, 1915), pp. 333-35; H. B. Twyford, "Fundamental Requisites in Purchasing," LII (March, 1917), pp. 800-05.

⁴²James M. Cremer, "The Engineer as a Purchasing Agent," Cassier's Magazine, XXXIV (August, 1908), pp. 322-32.

⁴³Ibid., p. 332.

purchasing function had achieved in some companies soon after the turn of the century can be readily seen. The first such article concerned organization of the Lynn, Massachusetts works of General Electric, and contained an organization chart showing the "Purchasing Agent" on a level with the "Mechanical Superintendent," and "Superintendent of Production," and the "Factory Accountant." All these positions reported to the General Manager, who in turn reported to a vice president.⁴⁴

Also in 1908, the organization of the Westinghouse Electric and Manufacturing Company was discussed:

Under the plan of organization of the Westinghouse Electric and Manufacturing Company there are six departments directly concerned in production, viz: 1. The Correspondence Department, 2. The Engineering Department, 3. The Purchasing Department, 4. The Manufacturing Department, 5. The Raw and Finished Material Stores, 6. The Shipping Department. The heads of the first three report directly to one of the vice-presidents while the last three are in charge of the manager of works who reports also to a vice-president.⁴⁵

Books on Purchasing, 1911-1921

The third book devoted to the purchasing and materials functions, The Supply Department, published in 1911, primarily

⁴⁴George F. Stratton, "The Management of Production in a Great Factory: Division of Responsibility and Authority in the General Electric Company's Shops," The Engineering Magazine, XXXIV (January, 1908), p. 572.

⁴⁵H. M. Wharton, "The Production System of the Westinghouse Electric and Manufacturing Company," The Engineering Magazine, XXXIV (March, 1908), p. 891.

concerned railroad purchasing and materials practices.⁴⁶

The author, H. C. Pearce, General Storekeeper of the Southern Pacific Company, stated that supply departments were established and maintained on some railroads

. . . as long as 25 years; notably the Chicago & North Western; the Chicago, Milwaukee and St. Paul; the Union Pacific; the Burlington; and the Great Northern. The last ten years have brought great consolidation, new methods and economies, particularly as to the system of buying from manufacturers on specifications. This necessitated a more thorough and complete supply organization, and today, with one exception, there is not a system of any importance that has not a supply department, the business of which is to provide, distribute and account for all materials.⁴⁷

Pearce advocated a type of materials management organization in which there was an "officer in charge of materials and supplies," to which a "Purchasing Agent," "Fuel Agent," "General Storekeeper," and "Engineer of Tests" reported, and said:

On properties which the amount of materials used does not warrant an organization of this kind there should be a supply agent who would be responsible for both the buying and distribution. On larger systems, however, unquestionably the proper organization is an officer in charge of both purchases and distribution, with a subhead to do the buying and another to maintain the stock and have charge of the distribution.⁴⁸

⁴⁶H. C. Pearce, The Supply Department (New York: Railway Age Gazette, 1911), 112 pages.

⁴⁷Ibid., p. 2.

⁴⁸Ibid., p. 108.

Three books on the purchasing and materials functions appeared in 1915, indicating a growing interest in the subject. The first of these, Materials and Supplies,⁴⁹ was in three sections: the first on "Purchasing Methods," the second on "Setting Up Material Standards," and the third on "Store-keeping." Each section contained chapters written by several different individuals. The "Purchasing Methods" section contained brief, general discussions of the procedures recommended for use in handling a concern's purchases, and included chapters on "Deciding Whether To Make or Buy," and "How Price and Service Are Secured."

The second book to appear in 1915, Purchasing,⁵⁰ was written by C. S. Rindsfoos, who was President of the United States Purchasing Corporation, a buying company which performed the purchasing functions for other companies for a fee. The author, understandably, attempted to promote the idea of buying companies, and stated:

The author believes there are many reasons why the ideal purchasing department of the not far distant future will be in the form of a separate company. In fact, one or two such companies are already organized and in

⁴⁹Materials and Supplies ("The Factory Management Series"; Chicago: A. W. Shaw Company, 1915), 216 pages.

⁵⁰C. S. Rindsfoos, Purchasing (New York: McGraw-Hill Book Company, Inc., 1915), 165 pages.

successful operation--successful in the saving they effect for their clients no less than in the profits they earn.⁵¹

This book gave little attention to the forms and procedures of purchasing; instead it discussed subjects such as determination of price, service, and terms. Chapter Seven, entitled "Strategy," contained some interesting suggestions regarding the use of strategy in purchasing, as the following paragraph shows:

The strategist is a student of human nature. The application of strategy in buying, as well as in selling, involves a knowledge of human nature and the ability to portray. The buyer must study the man with whom he deals, seek out his weaknesses, discern what is in his mind, learn the policies of the house he represents and act or portray his own part accordingly. One man can be flattered; another can be bullied. One man can be won by an appeal to his sense of fairness; whereas another who is always looking for an opportunity to get the better of the buyer can be made to think he is succeeding and so be made to fall into his own trap. It is no less essential to know the failings of the seller than it is to conceal one's own desires, weaknesses and thoughts.⁵²

The third of the books to appear in 1915 was a brief, general approach to the subject, written by H. B. Twyford, Purchasing Agent of the Otis Elevator Company.⁵³ Chapters were included on "Ethics of Buying," "Organization of the

⁵¹Ibid., p. 104.

⁵²Ibid., p. 69.

⁵³H. B. Twyford, Purchasing--Its Economic Aspect and Proper Method (New York: D. Van Nostrand Company, 1915), 236 pages.

Department," "Obtaining and Tabulating Proper Records," plus chapters on purchasing problems of different types of industries.

As had several other authors previously, Twyford commented on the lack of knowledge available on the subject of purchasing, stating:

Constructive thinking in its application to the production department has been elaborated on in many volumes, and in the technology journals and periodicals. The literature on the art of salesmanship is voluminous and highly scientific. The problems connected with accounting methods have been analyzed and discussed exhaustively. The intricacies of finance have been sifted and examined, and placed before students of the subject in an interesting and attractive form. This is in contradistinction to the literature devoted to the philosophy and art of buying, which is neither extensive nor exhaustive, although it is a subject of equal importance and is an attractive and alluring study.⁵⁴

Twyford placed great emphasis on the necessity for a purchasing agent to systematically collect and study data relating to the materials he was buying and the vendors with whom he dealt, as the following quotation illustrates:

It has been stated that there is no such thing as scientific buying, but that good buying is the result of intuitively knowing when and how to do it, which, with a combination of luck, makes a successful buyer. It can be admitted that with this equipment a successful gambler may be evolved, but intuition is too vague a qualification for the purchasing agent of any establishment, large or small. There is a great deal more necessary in the make-up of any man who has charge of such work as is being

⁵⁴Ibid., p. 17.

considered here. He must have good judgment, be well balanced, shrewd, sagacious, and well fortified with the knowledge which he can scientifically accumulate; this, broadened and improved by a close study of local and national conditions, will make a purchasing agent a valuable asset to any concern.⁵⁵

It appears that for some reason no books on purchasing appeared for the next five years. Although many authors indicate that it was only during the war years of 1914-1918 that the purchasing function first received considerable recognition, no books on purchasing were found between the years 1916-1920.

Books on Purchasing, 1921-1928

In 1921 a second book appeared by H. B. Twyford. This book, entitled Purchasing and Storing,⁵⁶ was very similar to his earlier, 1915 book.

In the year 1922, no less than six books appeared which were either entirely devoted to purchasing, or had major parts devoted to the purchasing function. Some of the statements in these books are of interest in showing the prevailing attitude toward purchasing and the purchasing agent.

⁵⁵Ibid., p. 26.

⁵⁶H. B. Twyford, Purchasing and Storing ("Factory Management Course," Vol. IV; New York: Industrial Extension Institute, 1921), 435 pages.

Albert E. Bull's book, published in London, attempted to cover the work of the buyer in all lines; retail, wholesale, manufacturing, import and export.⁵⁷ His comments on the position of the buyer, relative to the salesman, are most interesting:

Buying, on the whole, is rarely as important as selling. Salesmanship, in which is involved the opening of new markets, the extension of trade, the actual creation of a commercial concern, demands greater ingenuity, a bolder course of action, a finer imagination and a wider power of resource than buying can ever do.

A salesman must be hopeful and creative. He should possess robust health and have plenty of vital forces to burn up. A buyer can be morose and ill and cross-grained and despairing, without doing himself or his cause much harm.⁵⁸

The only purchasing book found authored by a woman was published in 1922.⁵⁹ Helen Hysell's comments on the increasing recognition of the purchasing manager within the organization structure, and also her material on analysis of individuals, are of interest.

BUSINESS CYCLES AND PLANNING AHEAD--The purchasing agent should be in the "crow's nest" or "lookout" of the business craft equally, if not more often, than the sales director. The sales department may figure out its plans for a year ahead, but, without the purchasing agent's cooperation in obtaining the raw materials to manufacture, or the finished materials for them to resell, on terms at a price that will

⁵⁷Albert E. Bull, Buying Goods: The Commercial Buyer and His Work (London: Sir Isaac Pitman & Sons, Ltd., 1922), 96 pages.

⁵⁸Ibid., p. 1.

⁵⁹Helen Hysell, The Science of Purchasing (New York: D. Appleton and Company, 1922), 261 pages.

meet competition at the time of the sale, the sales department, as well as the financial department, will be greatly handicapped and the aim of all departments--profit--will be that much lessened if not entirely consumed.⁶⁰

Hysell also gave advice on how to analyze character and disposition of salesmen:

For example, the broad, high, square-shaped forehead indicates analytical power, intelligence, perseverance, and severity. The more it tends toward rounded, and cornerless outlines, the more flexibility of character does it indicate. The retreating forehead indicates imagination, feeling, wit and keen perception. The projecting forehead is a sign of weakness of will.

The eyes indicate the feeling rather than the intellect, though there are a few rules that are more or less reliable.

The chin and lips are watched not only for construction, but also for expression. Thin lips usually indicate industry and order, etc. If the lips are drawn down at the corners they show a weak or pessimistic disposition. Large, well-defined lips show energy and vitality. Lips, however large, if well formed and well closed, indicate power, ability, energy and good sense.⁶¹

Salesmen, as a rule, are reluctant to offer to shake hands with the purchasing executive as they have learned, through experience, that many purchasers dislike the practice. It is well, however, for the purchasing director to offer his hand to the salesman. This gives an additional opportunity for judging the type of man with whom he is about to talk.⁶²

⁶⁰Ibid., p. 102.

⁶¹Ibid., p. 44.

⁶²Ibid., p. 50.

John C. Dinsmore, who at the time was Purchasing Agent at the University of Chicago, wrote a book on purchasing which treated briefly the procedures for performing the purchasing function, and had several chapters devoted to the purchase of specific types of commodities.⁶³ His comments indicated that study and preparation were just as much of a necessity for the individual wishing to do a competent purchasing job, as for any other occupation:

I want to drive home the fact that it is just as impossible for a man without preparation so to spend money that he will best serve his firm, as it is successfully to follow any other trade or profession without preparation. It is equally impossible for the purchasing agent to continue to grow if he does not continue to study.⁶⁴

Madison Cartmell, in a book primarily devoted to store-keeping and concentrating on procedures⁶⁵ commented on the growing importance being accorded to performance of the purchasing function, but also recognized that not all firms considered the purchasing functions as requiring specialized personnel:

The purchasing department is a comparatively new factor in business organization. Its general adoption reflects changing conditions in purchasing and an increasing

⁶³John C. Dinsmore, Purchasing: Principles and Practices (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1922), 295 pages.

⁶⁴Ibid., p. 1.

⁶⁵Madison Cartmell, Stores and Material Control, Including Procurement by Manufacture and by Purchase (New York: Ronald Press Co., 1922), 459 pages.

realization of the important part played by good buying in the success of any business enterprise. There are many large concerns, however, which persist in the old method of departmental buying.⁶⁶

The other two books to appear in 1922 primarily emphasized the stores function rather than the purchasing function, although devoting some space to the performance of purchasing.⁶⁷

In 1924 a book by H. D. Murphy appeared, which was a very brief treatment of the duties of the purchasing agent.⁶⁸

William N. Mitchell authored a book in 1927 which made a specific reference to research within the purchasing department.⁶⁹ An organization chart included by Mitchell for a large purchasing department showed "Research" reporting to the "Assistant Purchasing Manager." Reporting to "Research" were "Vendor Relations" and "Library Service."⁷⁰ No narrative accompanied this chart; thus, one cannot tell whether it was

⁶⁶Ibid., p. 257.

⁶⁷Henry H. Farquhar, Factory Storeskeeping: The Control and Storage of Materials (New York: McGraw-Hill Book Company, Inc., 1922), 182 pages; Alexander Hamilton Church, The Making of an Executive (Book II, Part 4, "Purchasing and Storekeeping"; Scranton, Pennsylvania: International Textbook Company, 1922), pp. 1-55.

⁶⁸Harry Duncan Murphy, The Fundamental Principles of Purchasing (New York: Purchasing Agent Company, Inc., 1924), 83 pages.

⁶⁹William Norman Mitchell, Purchasing (New York: Ronald Press Company, 1927), 385 pages.

⁷⁰Ibid., p. 168.

meant as a functional or organizational chart, or a combination of both.

Two books appeared in 1928. The first, Principles of Scientific Purchasing, was written by Norman F. Harriman, who was employed in purchasing with the Union Pacific Railroad.⁷¹ Relative to the importance of the purchasing function, and the progress which had been made up to that time, Harriman said:

The science of buying is recognized more clearly in its proper perspective today than ever before. Increasing consideration is being given not only to the first cost but also to the longer range factors of fitness, interchangeability, renewals, replacements, general maintenance, wearing qualities, and cost per unit of utility. The tendency to buy at so much per unit of quality or utility, instead of per unit of quantity, is one that will increase. The idea is fundamentally and economically sound.⁷²

Harriman's book is significant to this study mainly because of the recommendations made regarding scientific, systematic collection of data, by specialists, as a basis for purchasing decisions.⁷³ Specifically, he noted, and recommended use of individuals called "Purchase Engineers" to aid the buyers in investigating potential areas of cost reduction.

⁷¹Norman F. Harriman, Principles of Scientific Purchasing (New York: McGraw-Hill Book Company, Inc., 1928), 301 pages.

⁷²Ibid., p. 21.

⁷³Ibid., pp. 113, 122-23, 229-30.

His specific comments on the duties of the "Purchase Engineer" are reviewed in Chapter III.

Another book which also appeared in 1928, Scientific Purchasing, was authored by Edward Tisdale Gushée and Lionel Frank Boffey.⁷⁴ These authors approached the subject of purchasing from an analytical point of view, emphasizing the importance of, as did Harriman, systematic data collection by specialists. These authors referred to an "Economics Division" within the Purchasing Department, and stated:

The economics division is an extremely important part of the purchasing organization. Broadly, the function of this department is to maintain all records relating to the prices of products, to study materials and markets, to analyze the prices paid for commodities and equipment, and generally to point the way to savings through more intelligent specifications and supervision of sources of supply. This division or its equivalent is essential for every purchasing department which expects to make major savings. Economy in purchasing is not a matter of selecting the lowest of a number of bids, but of knowing that the material bought is adopted for requirements, efficiently produced, and bought at a price which represents a fair profit to the seller.⁷⁵

The author's comments on the work of, and justification for, the "Economics Division" will be examined in detail in the next chapter.

⁷⁴Edward Tisdale Gushée and Lionel Frank Boffey, Scientific Purchasing (New York: McGraw-Hill Book Company, Inc., 1928), 196 pages.

⁷⁵Ibid., p. 59.

These authors also emphasized proper timing of purchases, based on analysis of data and stated:

There are some purchasing agents who believe, or profess to believe, that to buy successfully demands a sixth sense--a sort of intuition or "hunch" as to the trend of general business and the tendency of specific markets.

That belief is utter nonsense. As a matter of fact, the purchasing agent who claims that he follows a "hunch" in a particular transaction will find, on self-analysis, that his action is really based on what he has read or heard.⁷⁶

Market studies, economic analyses, graphic charts accurately and regularly revised, established policies of purchasing to take the utmost advantage of prevailing conditions--these are facilities which are essential to enable the purchasing agent to time his buying most effectively, provided he has the wisdom to interpret business conditions and the courage to act in conformity with the interpretation.⁷⁷

The authors also recommended the use of "price analysis," consisting of an evaluation of labor, material, and overhead costs in targeting a fair price for a given purchase:

A quantity of bronze castings are to be bought. Quotations are asked from two approved sources of supply. Source A quotes 1/4 cent per pound under Source B. Both sources have demonstrated their ability on previous occasions to meet the buyer's specifications of quality and delivery. The obvious course is to settle the matter by awarding the contract to Source A.

But the buyer in this instance follows the practice of analyzing the bids. His record of past purchases shows that castings from the same patterns were ordered from Source A some months previously. The quantity and

⁷⁶ Ibid., p. 99.

⁷⁷ Ibid., p. 104.

price on that occasion were identical with the current bid. Knowing the proportion of copper, tin, lead, and spelter in the castings, the buyer readily ascertains that the composite price of the materials has declined since the previous purchase to a point that warrants a reduction of 3/4 cent per pound in the price of the castings.⁷⁸

Conclusion

This completes the review of literature on the purchasing function. Appropriate journal articles through 1910, and books through 1928, were reviewed. This review had two useful results: First, it established the date of the literature on the subject of the staff purchase research function (the two 1928 books by Harriman and by Gushée and Boffey). Second, it provided a background of information on the evolution of thought concerning the purchasing function.

This research into purchasing literature established that there were people interested in the purchasing function, and writing about it, even before the turn of the twentieth century. This refutes commonly held, and often stated, beliefs that interest in purchasing is a product solely of this century, and primarily only after World War I. Purchasing is a much older and more recognized function than commonly thought. Further research is needed on the early development of the purchasing function and early purchasing literature.

⁷⁸ Ibid., p. 111.

Chapter Summary

As a background for the study of the staff purchasing research function, an examination was made of early literature on the purchasing function. The literature on the purchasing function extends back into the nineteenth century, contrary to the statements in several of the popular textbooks. Charles Babbage, in his classic work on industrial management, On the Economy of Machinery and Manufacturers, published in 1832, made reference to the purchasing function in two places.

Writings on the purchasing function by railroad management seem to have preceded similar interest in the industrial field, as trade journals in the railroad field show. The first American book exclusively on the purchasing and materials functions, The Handling of Railway Supplies--Their Purchase and Disposition, was published in 1887.

Before the end of the nineteenth century, articles had been published which discussed topics such as: seeking competitive bids (1870), organization of the purchasing function (1890), duties of a purchasing agent (1890), standardization (1890), capital equipment purchasing (1892), and the responsibilities of the purchasing agent (1898).

More articles on purchasing appeared after the turn of the century. The articles discussed subjects such as dealings with

salesmen, specifications, materials management, price analysis, organization of a purchasing department, and centralized purchasing. By the year 1910 several such articles concerned solely with the purchasing function had appeared. These articles indicated the similarity of problem areas of that time to those currently discussed in today's purchasing literature.

The 1905 book, Book on Buying, was the first book found that was devoted exclusively to the purchasing function in other than railroad organizations. Approximately 15 books on the purchasing function had been published by the year 1927, which provides an indication of the growing interest in study and writing on the purchasing function.

In 1928 two books were published which presented well developed managerial approaches to the purchasing function. Both books, one by Norman F. Harriman, Principles of Scientific Purchasing, and the other by Edward Tisdale Gushée and Lionel Frank Boffey, Scientific Purchasing, concentrated primarily on the management aspects of purchasing, as opposed to the specific forms and procedures used to facilitate purchasing operations. Both emphasized the necessity for systematic collection and analysis of data as a basis for informed purchasing and materials decisions, and advocated the employment of non-buying specialists for the collection, analysis, and presentation of this decision making data.

Journal articles after 1910, and books after 1928, were not reviewed, for the purpose of this particular research was to establish the earliest recognition of the purchasing function in the literature, and to trace the early development of this literature. This research did establish that interest in the purchasing function developed considerably earlier than recently written literature on purchasing would lead one to believe. Further research into the early development of thought on the purchasing function, and the factors influencing this development, is needed.

CHAPTER III

LITERATURE ON THE STAFF PURCHASING
RESEARCH FUNCTIONIntroduction

As a background for this present study of the use of staff personnel for research in purchasing, a search was made to determine what literature was available on this subject. The review of literature was of value in formulating the present study for three reasons. First, it established the depth and scope of presently available knowledge on the subject. Since relatively little literature on the subject was found, it provided a partial indication of the need for a study of this nature. Second, it provided information on the degree to which the staff approach to purchasing research had been accepted by industry. The fact that an increasing number of articles detailing specific company practice in the utilization of staff purchase research personnel had been written since World War II showed this to be an organizational practice which appeared to be used in a substantial, but unknown, number of companies. The third contribution of the literature review was that it provided some basis for structuring the study, for the articles on specific company's staff purchase research practices indicated how this staff function was organized, on what research topics a staff might be

involved, and the methodology which might be employed in the actual performance of purchasing research.

Since the objective of this study was to investigate the use of specialized staff personnel for the performance of purchasing research, only that literature relating to the use of a research staff is reviewed in this chapter. There is a considerable amount of literature available on the subject of value analysis in purchasing,¹ and much of this literature was consulted in the course of this study; however, it is not reviewed in this chapter unless it specifically discussed the use of staff.

The literature on the staff purchasing research function reviewed in this chapter is presented in three sections. The first section presents the earliest known literature recommending the use of staff personnel within the purchasing department for the performance of purchasing research. The

¹For example, Value Engineering (Elizabeth, N.J.: Engineering Publishers, 1959, 165 pages), contains papers presented at the Electronic Industries Association Conference on Value Engineering. This book uses the term "value engineering" synonymously with the term "value analysis."

Cutting Costs by Analyzing Values (New York: National Association of Purchasing Agents, 1952, 80 pages), a handbook of suggested techniques for value analysis, includes examples of specific projects.

Numerous articles have appeared in various trade magazines. Two of these articles were: "Purchasing Spearheads Value Analysis Program," Purchasing, XLV (December 22, 1959), pp. 49-50; and "Purchase Analysis: It's a Job for Buyers," Purchasing, XLIX (July 18, 1960), pp. 90-91.

second section reviews the literature on specific company practice in the employment of a purchase research staff. The third section presents findings of four surveys which presented some information on the use of staff in a group of companies for the performance of purchasing research.

Early Literature

The earliest reference to the use of staff personnel for the performance of purchasing research was found in the two 1928 books by Gushée and Boffey and by Harriman which were referred to in the previous chapter.² Both these books devoted some space to a discussion of the reasons for the utilization of staff personnel for purchase research (although not using the term "purchase research staff"), and the duties that would be performed by these personnel.

The Gushée and Boffey book presented a suggested organization chart for a firm "with a large volume of purchases," and indicated a position of "Chief Clerk--Economics Division" reporting to the purchasing agent.³ This organization chart also listed the following four areas of activity of this

² Edward Tisdale Gushée and Lionel Frank Boffey, Scientific Purchasing (New York: McGraw-Hill Book Company, Inc., 1928), 196 pages; and Norman F. Harriman, Principles of Scientific Purchasing (New York: McGraw-Hill Book Company, Inc., 1928), 301 pages.

³ Gushée and Boffey, op. cit., p. 63.

position: Price Record File, Commodity Studies and Market Analysis, Publications and Vendor Catalogs, and Preparation of Data for Standardization Committees. Regarding the qualifications an individual should have for the position of Chief Clerk--Economics Division, the authors stated:

It is desirable that the head of the economics division of the purchasing department shall be a commercial economist. He must have a thorough grasp of the conditions which affect supply and prices, and the ability to present those conditions in text and graphic form for quick visualization by the purchasing agents and buyers.⁴

In speaking of the organization and work of this division, Gushée and Boffey stated:

. . . compilation of information which will lead to sound buying is a paramount duty of the well-organized purchasing department. In the concern where volume of purchases is large a special division of the purchasing department should be assigned to the work of compiling information The work of such a division can be carried out in the small concern by a single assistant of the purchasing agent

The division in question may be styled the "economics division." Its purpose is to compile and preserve all information of an economic nature that may be needed to guide the purchasing agent and the buyers in selecting the proper source of supply and in buying at the right time, in the right quantity and quality, and at the right price.⁵

In discussing the areas of activity of this division they stated that the work would be largely in the areas of

⁴Ibid., p. 59.

⁵Ibid., p. 81.

statistical analysis, product research, and vendor analysis, as follows:

One of the most important functions of the economics division is its charting and statistical work . . . the charting falls broadly in three classes:

1. That which shows general business conditions or trends, such as a wholesale or composite price movement, car movements, stocks on hand, labor employment, stock exchange variations, and the like.
2. Charts which show the prices for materials entering into the major items of purchase, such as copper, lead, various forms of steel, rubber, oil, lumber, cotton, and other commodities.
3. Charts which reflect the performance of the department.⁶

There will be many variations of such statistical studies and graphic presentations which it will be found advisable to have the economics division undertake Many studies will produce no practical results, but the apparent waste of effort in such cases will be offset by a single statistical analysis which will point the way to savings that more than pay the entire operating costs of the purchasing department. The entire work of the economics division is based on the assumption that scientific purchasing is possible only when major purchasing decisions are made after carefully weighing, measuring, and comparing all the facts which have a bearing on the purchase.

The economics division should work closely with the buying division. Each day the buyers should be given a list of the market prices of basic materials with which they are concerned and a labor index if it is available for those industries, for reference and as a guide in their negotiations. When a buyer contemplates an important purchase he should consult all the data bearing on that purchase which the economics division can place before him. The decision as to the action to be taken must rest with the buyer, but when his decision is at variance with the

⁶Ibid., p. 85.

conclusions of the economics division the logical course is to submit the entire matter to the purchasing agent before proceeding.

In conjunction with the buying and inspection divisions, the economics division should make detailed studies of purchased items. The records of the division, showing the amounts expended for the various classes of purchases, will suggest the items which warrant special study with a view towards making savings. These studies may lead into the construction and design of the article, with a thorough investigation of sources, quantities, and an inevitable emphasis on standardization. When completed, recommendations should be made as to changes in quality, construction or design, specifications, the quantity and time to buy, cost approximation of the revised product, and the probable price trend.

Such studies must be made with tact and judgement The results of such studies will be gratifying in most cases. Frequently, the recommendations made at the completion of a study will, if carried out, cut the unit cost of an article in half and even greater reductions will occasionally be made.

A record of special importance which the economics department should maintain is a "pound-price" file. This is applicable to all forms of machinery, equipment, and fabricated materials. The reduction of the prices charged for such items to a price per pound gives a valuable basis for analysis of the cost. Similar records should be kept of the cost per square foot and cubic foot on various kinds of construction work.⁷

Financial reports, giving all available information on the volume of business, gross and net profits, and general stability of concerns with which the company deals, should be included in the records of the division. The data may be procured from stock market reports, published statements, statistical service companies, and commercial agencies. A record of the total amount of business, in dollars and cents, given to each vendor should also be kept.

⁷Ibid., p. 87.

In summary, when any important purchase is contemplated, the economics division should be able to provide all essential information to enable a proper decision to be made. This information must include a record of all previous purchases of the item; the concerns from which the purchases were made; their performance; the prices paid, both unit and pound; the market levels of the major materials entering into the cost of the article at the time of previous purchases, and the present levels of the same materials for comparison; the financial reliability of the various bidders for the present order; the possibility of a cheaper purchase of the item in the near future; the unit and pound prices of items of similar construction; the amount of business done with each firm quoting on the present requirement.

The buyer or purchasing agent to whom this type of information is available will not be required to guess at the right quality, quantity, time, source, and price. He will have the facts which should lead him, in the majority of cases, to proper conclusions. It is this reliance upon knowledge instead of guesswork which distinguishes scientific purchasing from rule-of-thumb buying.⁸

It can thus be seen that many of the major functions which today are performed in purchasing research departments of major industrial firms were spelled out in this early text.

That the economics division should exercise only staff authority within the purchasing department is shown by comments on the relationship of the economics division to the buying personnel:

His [the buyer's] observations will usually be influenced or supported by data coming to him from the economics or statistical division of his own company, by information from salesmen, and by his general knowledge of market

⁸Ibid., p. 88.

conditions; but the responsibility for determining the policy to be followed rests with the buyer.⁹

The overall importance of the analytical work of a purchasing research nature is shown by the following remarks:

Modern purchasing is more of an analytical than a trading function, and the buyer who studies the material, its price structure, and the economic features of supply and value, will show greater savings than one who relies solely on instinct.

In the management of the department the purchasing agent should regularly call his division heads and buyers into conference. They should be encouraged to suggest and develop improved methods for their own work, and that of the department as a whole. It will be of particular value at these conferences to establish the buying policy for the current period and the near future. The statistics of the economics division will be the foundation of the policy, but the buyers will frequently furnish supporting or opposing data gathered from conferences with salesmen.¹⁰

It is undeniably true that the concern which aims to profit by scientific purchasing must appropriate a more liberal sum for the administrative cost of purchasing than was formerly considered necessary. Research costs money, and this is just as true in purchasing as in other fields. But any form of commercial research which returns ten dollars in profit for every dollar expended in the effort, and continues that return long after the original investment has been paid and forgotten, is assuredly worth while. That is what scientific purchasing may be expected to do in the typical industrial concern if it is seriously studied, organized, and applied. The estimate is conservative. It is predicted on the results achieved by scientific purchasing in many progressive industries of today.¹¹

⁹Ibid., p. 39.

¹⁰Ibid., p. 169.

¹¹Ibid., p. 187.

Another purchasing text which appeared in 1928 contained similar recommendations regarding the practical necessity for using staff personnel for the collection, analysis, and evaluation of purchasing data.¹² Specifically, the author recommended use of a "Purchase Engineer" and stated the following regarding this individual and his work:

Some large concerns have a special expert, called a Purchase Engineer, for the purpose of controlling prices by the judicious use of engineering and economic knowledge.

The duties of the purchasing engineer are many and varied. He is not only an information bureau for the purchasing agent but also acts in a technical advisory capacity as well. He studies fundamental factors that control price movements, as well as principles that underlie the production of raw materials and fabricated products. He investigates and checks the market prices of fabricated products peculiar to a business, to make sure that they are consistent with the price trends of raw materials and labor. Inasmuch as the purchase engineer does not conduct actual buying negotiations, his opinion is unbiased one way or another by the psychology of salesmanship.

Many and various problems which continually arise in connection with buying, and which the purchasing agent has not the opportunity to go into thoroughly, are referred to the purchase engineer in order that the true facts of the case may be obtained and properly analyzed. These facts, based on analytical study of the fundamental factors involved, as well as the current conditions which affect the situation, of necessity bring to the purchasing agent a picture of the underlying causes of events and the probable future trends. This aids him in making decisions as to the policy upon which his purchasing activities should be based. In other words, the bargaining "order giver" of former days is replaced, through the aid of the purchase engineer, by a well-informed purchasing agent.

¹²Harriman, op. cit.

An approach of buying from the engineering angle will show clearly that the strategy of buying is not so much a matter of price as of essential values. This plan is used by the very efficient purchasing department of the Western Electric Company.¹³

Harriman argued that a company cannot afford not to have specialized staff service and advice if it is to do an adequate job of purchasing, saying:

No purchasing agent can rely on his individual qualifications to solve successfully the present and future problems of buying. If he is to succeed, he must have the proper equipment for his work. Facilities for research, engineering talent for the preparation of specifications, test and inspection equipment, statistical service, efficient records for all phases of purchasing--these are essentials in modern buying.

It may be argued that only corporations of unusual buying power can afford to equip their purchasing departments along these lines. That argument is unsound. The medium-sized concern, with a limited purchase budget, may not afford a laboratory of its own, but it can utilize private and semipublic research organizations. Expert test and inspection service can be secured when needed without maintaining a special staff for the purpose. The employment of an engineering assistant and a compiler of charts and statistics to aid the purchasing agent, will slightly increase the salary list of the department, but the additional expenditure will make possible economies many times as great. A purchasing agent cannot buy efficiently and economically if he lacks the necessary organization for his work.¹⁴

The authors of both of these books had, at this early date (1928), a clear and concise picture of the potential benefits which could accrue to the purchasing organization, and thus

¹³Ibid., p. 122.

¹⁴Ibid., p. 229.

the firm, from the use of staff research specialists within the purchasing department. The suggestions of these authors seem to have had relatively little immediate impact on corporate purchasing practice, although four of the 304 firms surveyed in this present study did indicate the establishment of a research staff in the year 1930. If these books had appeared at a time other than just before the Great Depression, they might have had a more profound influence on corporate purchasing organization and practice.

No mention of the use of a staff for purchasing research was found in the literature on purchasing which appeared between the time of publication of these two books and the end of World War II.

Company Practice

Following World War II, articles began appearing which described the practice of specific companies in the utilization of staff personnel to collect, analyze, and present data useful for purchasing decisions. The first such article appeared in 1946, and described the duties of a position of purchase engineer, as follows:

The purchase engineer in the "pure state" places no orders, compares no prices, supervises no inventory, works up no contracts. His job is to develop highly pertinent engineering data for the buyers to use, and to act as engineering liaison between the purchasing department and the production, company sales engineering, maintenance

and other engineering executives. Of course, his tasks can be made to include some of the standard purchasing functions, or he can be one of the plant engineers assigned to the purchasing department on a part-time basis; there are no limitations on his working basis.¹⁵

This author went on to state that the large automobile manufacturers were among the first to establish such positions, and that they had been in existence, under one title or another, for the "past thirty years." No specific companies were cited. Results of this present survey do not bear out Cady's statement about the time at which such positions were established, for the earliest date of establishment of a purchase research staff by any of the seventeen companies with staff in the Transportation Equipment Industry which responded by questionnaire was 1930. Except for the company indicating establishment of staff in 1930, no other firms in that industry indicated establishment of staff until 1946. However, the positions referred to by Cady could have been in the engineering department, as the quotation from his article indicates. This present study is concerned with the use of staff purchase research personnel only within the purchasing department, which may account for the variance between his statement and the results of this study.

¹⁵E. L. Cady, "How Purchase Engineers Function," Purchasing, XX (April, 1946), p. 112.

The first company to receive considerable amounts of publicity on its staff method of organization to perform purchasing research was the Ford Motor Company. A 1947 article by the Vice-President of Purchasing indicated that, as a result of a management study, Ford had established a commodity research department, to provide short-and long-term information on basic commodities to buyers; and a purchase analysis department to give buyers help on product and price analysis.¹⁶

Purchasing devoted its July 1948 issue to the Ford purchasing organization; this issue contained several articles on their purchasing research activities.¹⁷ Victor G. Lottman, formerly Manager of Sales Research for the Ralston Purina Company and Manager of Economic Research for Booz, Allen & Hamilton, headed the research effort, as Director of the Purchasing Research Department. This Research Department was divided into the following two sections: a Research Section and a Statistical Section. The Research Section made recommendations on basic purchasing policy and procedure,

¹⁶Albert J. Browning, "Purchasing--A Challenge and an Opportunity," Purchasing, XXIII (December, 1947), pp. 99-101.

¹⁷"Organization for Purchasing," Purchasing, XXV (July, 1948), pp. 150-51; Victor G. Lottman, "Research Leads to Sound Purchasing Policies," Purchasing, XXV (July, 1948), pp. 173-75; "Purchase Analysis Helps Determine . . . the Right Product . . . the Right Source . . . the Right Price," Purchasing, XXV (July, 1948), pp. 176-80.

and also made long-term forecasts of material availability and price. The Statistical Section developed statistical data on commodities, price trends, and performance trends. Additionally, the Purchasing Research Department coordinated the work of Purchase Analysts, located in a staff capacity within each of the buying divisions, who assisted buyers in price analysis, development of price trends, market analysis, financial analysis of vendors, cost analysis, product analysis, and analysis of incidental costs. Many additional articles have appeared on the Ford purchasing research organization and its activities.¹⁸ A recent article indicated that in 1960 there were 180 men in the Ford purchasing research organization.¹⁹

The General Electric Company's staff value analysis organization, established in 1947, was described in a 1950 article.²⁰ At the time of this article, there were three

¹⁸Victor G. Lottman, "Cost Reduction through Purchasing," Purchasing, XXV (August, 1948), pp. 118-20; Victor G. Lottman, "The Techniques of Cost Reduction," Purchasing, XXV (November, 1948), pp. 93-95; "Purchase Analysts Save Money for Ford," American Business, XX (January, 1950), pp. 16-17; "Purchase Analysis Savings Run into Six Figures," Purchasing, XXX (June, 1951), p. 117.

¹⁹Dean Ammer, "The Purchasing Department: Ford's Cost Control Center," Purchasing, XLVIII (May 23, 1960), p. 55.

²⁰"Value Analysis . . . a purchasing technique that is saving hundreds of thousands of dollars each year for the General Electric Company," Purchasing, XXVIII (June, 1950), pp. 94-101.

staff people in their Value Analysis Department. The original aims of this department were to increase knowledge of basic value: to determine how nearly each individual part, component, and material in the company's new products contained basic value; to establish methods for analyzing and measuring value; and to provide the necessary action to assure value on a company-wide scale. According to this article, the first purchased item analyzed saved \$300,000 annually.

The value analysis approach of General Electric concentrated on studies to learn what different materials, changes of specifications and design would reduce costs, while still adequately performing the necessary function or utility. As originally set up, ten tests for value were employed:

1. Does the use of the item contribute value?
2. Is its cost proportionate to its usefulness?
3. Does it need all of its features?
4. Is mica pack used for insulation?
5. Can a useable part be made by a lower cost method?
6. Can a standard product be found which will be useable?
7. Is it made on proper tooling, considering quantities used?
8. Do materials, reasonable labor, overhead, and profit total its cost?
9. Will another dependable supplier provide it for less?
10. Is anyone buying it for less?²¹

Frequent articles since have appeared on the General Electric value analysis program, and these articles indicate the staff has increased considerably in size from the three

²¹James H. Leonard, "The Coming of Age of Value Analysis," New York Purchasing Review, July, 1960, p. 18.

persons in 1950. Many of the individual General Electric plants have their own full-time staff value analyst.²²

In 1949 the Vice President for Purchasing at General Electric, in a talk reprinted in Purchasing, referred to the establishment of a Commodity Research Division at General Electric to give buying personnel pertinent information on the supply situation of basic purchased materials and components.²³ This information was later amplified on in an article by C. Willard Bryant, Manager of Materials, General Electric, in which he stated their staff purchasing research program began in 1948, with a Manager of Purchasing Research, who had reporting to him a Statistical Analyst and a Purchasing Analyst. The function of these people was to prepare economic information and reports for the use of buyers. One activity was the publication, on a frequent basis, of a "Price Information Bulletin," giving market price history and short-term price forecasts for about one hundred commodities; another was the construction and maintenance of purchase price indices; another (and the main activity) was the preparation of a ten-year commodity forecast on copper, a ten-

²²"General Electric's Program Still Sets the Pace," Purchasing, XLII (May, 1957), pp. 70-73; Dean Ammer, "Purchasing Coordinates Plant-Wide V-A Program," Purchasing, XLV (December 8, 1958), pp. 64-65; Richard A. Quinn, "Value Consulting Pays Off," Purchasing, XLIX (October 10, 1960), p. 95.

²³Harry L. Erlicher, "Purchasing for Greater Value," Purchasing, XXVII (August, 1949), p. 68.

year commodity forecast on steel, and a five-year commodity forecast on aluminum.²⁴

A third company to receive considerable publicity on its organizational arrangement to perform purchasing research was United States Steel Corporation. An article in Iron Age described the Purchasing Research Department, established in 1952, and the stated reasons for its establishment: "1. Buyers do not have the time for effective planning, and 2. Even if they have, purchasing research is better done objectively on a broad front."²⁵ The objectives of this department were to develop and analyze information on suppliers, price, inventories, consumption, and new commodities; forecast future material availability; find substitutes for items in short supply; and develop benchmarks for evaluating purchasing performance. This article concluded, probably incorrectly, that this department was, ". . . first of its kind in American industry. Other companies . . . have been trying to do a similar job, but with the difference that the function had not been clearly defined."²⁶

²⁴C. Willard Bryant, "Planning To Meet Materials Shortage . . . The Function of Purchasing Research," Purchasing, XXXV (August, 1953), pp. 81-83.

²⁵J. B. Delaney, "Purchasing: Research Gets Staff Status in Broad Program of U.S. Steel," Iron Age, CLXX (December 11, 1952), pp. 95-96.

²⁶Ibid., p. 96.

Additional articles on the U. S. Steel program followed.²⁷

In 1954 a doctoral dissertation was written for the purpose of determining the responsibilities of materials management in the determination of value of purchased materials.²⁸ This dissertation was primarily concerned with the administrative problems of value analysis, defined as "investigation of materials requirements to insure a proper balance between performance, ultimate cost, and availability of supply,"²⁹ As a part of the study, which concentrated on the responsibility of the purchasing administrator, case studies of three large, decentralized manufacturers which utilized a purchase research staff were presented. The companies were not identified. These case studies were used to illustrate the use of purchase research staff at a headquarters office to do studies of a larger magnitude than could be carried out by materials administrators at the operating level. These three specific case studies presented information on the major objectives of the staff purchase research program in each of these three companies. No aggregate analysis of the staff purchasing

²⁷For instance, "Purchasing Research," Purchasing, XXXVIII (May, 1955), pp. 92-97; and Robert F. Benson, "Purchasing and Commodity Research," in Purchasing for Profit, AMA Management Report No. 20 (New York: American Management Association, 1958), pp. 58-62.

²⁸Stanley Simon Miller, "Value Analysis in the Procurement of Materials" (unpublished D.C.S. dissertation, Graduate School of Business Administration, Harvard University, 1954), 386 pages.

²⁹Ibid., p. 8.

research function was attempted in this dissertation.

Following the initial articles concerning the staff organizational arrangement for purchase research at Ford, General Electric, and U. S. Steel have come several other articles on purchasing research describing the activities of particular companies which adopted the staff organizational concept. In 1954 an article appeared describing the aims and procedures of the procurement research section of George D. Roper Corporation, Rockford, Illinois.³⁰ A speech by H. K. LaRowe, Director of Purchases, American Cyanamid, to the 1954 meeting of the Chemical Market Research Association, described the work of their staff purchasing research activity in furnishing information to the buyer.³¹ The advantages of a full-time purchase research man in the smaller company were pointed out by a description of the program at Sprague Electric Company, North Adams, Massachusetts.³² Further articles appeared describing the purchase analysis

³⁰R. F. Hornbach, "Planning a Cost Reduction Program," Purchasing, XXXVI (May, 1954), pp. 99-103.

³¹"Market Research for the Buyer," Chemical and Engineering News, XXXII (October 4, 1954), p. 4026.

³²"Save \$ with Purchasing Research," Purchasing, XXXIX (November, 1955), pp. 71-73.

group, begun in 1953, at International Business Machines Corporation;³³ the work of the Purchasing Analyst, or Purchasing Engineer, at Brown Instrument Division of Minneapolis-Honeywell Co.;³⁴ the activities of the Technical Assistant at Purolator Products Company;³⁵ the staff purchase analysis program, begun in 1956, at Cleveland Graphite Bronze Company;³⁶ the formal purchase analysis program, begun in 1952, at Eaton Manufacturing Company, which had expanded to four full-time analyst positions by 1957;³⁷ and the duties of the Purchase Researcher at Corning Glass Works.³⁸ In discussing the value of the output of the two Purchasing Engineers at Tennessee Eastman Company, the comment was made:

Purchasing Research will never be a substitute for negotiation But in two years we have proved it is an excellent tool for the negotiator. When a buyer

³³"Purchase Analysis More Than Pays Its Way," Purchasing, XL (April, 1956), pp. 86-89.

³⁴"A One-Man Value Analysis Unit," Purchasing, XL (June, 1956), pp. 90-92.

³⁵"We Cut Purchasing Costs 3 Ways," Purchasing, XLII (June, 1957), pp. 83-86.

³⁶"Purchase Analysis in Action," Steel, CXLI (July 8, 1957), p. 63.

³⁷"Purchase Analysis Improves Competitive Position," Purchasing, XLIII (November, 1957), pp. 99-102; and a more recent article, T. M. Rohan, "New Ideas Cut Buying Costs . . . Purchase Analysis Team Breaks Precedent To Trim Costs," Iron Age, CLXXXVII (February 23, 1961), pp. 66-67.

³⁸Ned Kellogg, "The Forward Look in Purchasing," Purchasing, XLIV (January 20, 1958), pp. 71-74.

has complete information on a material he's equipped to deal with vendors on a much more knowledgeable basis than if he got his data on more or less of a hit-and-miss basis. And purchasing research also helps the division intelligently advise management on trends in price and availability of important raw materials, desirable inventory levels and lead times, and possible substitutes.³⁹

Monsanto Chemical Company's statistical forecasts of raw materials markets, prepared by two purchase researchers, were the subject of a 1958 article,⁴⁰ as was the two-year-old purchasing research program, employing thirty-eight full-time specialists, of the Chrysler Corporation.⁴¹ Information was also presented on the work of the Purchasing Analyst at the company headquarters of Kaiser Aluminum and Chemical Corporation;⁴² the job of the Raw Material Analyst at Merck and Company;⁴³ the work of the statistical section within the Western Electric purchasing department;⁴⁴ and the projects completed, and resultant savings, by the full-time Value

³⁹"Purchasing for Profit Saves Over \$5,000,000," Purchasing, XLIV (February 17, 1958), pp. 75-77.

⁴⁰"Statistical Forecasts Minimize Commodity Market Risks," Purchasing, XLIV (April 14, 1958), pp. 69-81.

⁴¹"Purchasing Research Brings Big Profits," Purchasing, XLVI (January 19, 1959), pp. 74-79.

⁴²"Purchasing at Kaiser Aluminum," Purchasing, XLVI (March 16, 1959), pp. 73-75.

⁴³"Purchase Research for More New Products," Purchasing, XLVII (September 14, 1959), pp. 75-78.

⁴⁴"Sound Decisions Are Based on Sound Information," Purchasing, XLVII (September 28, 1959), pp. 88-89.

Analyst reporting to the purchasing agent at General Motors' Electro Motive Division in LaGrange, Illinois.⁴⁵

A recent article discussed, briefly, the purchase research programs at U. S. Steel, Chrysler, Eaton Manufacturing Company, Monsanto Chemical Company, Mallory Metallurgical Company, and Lockheed Aircraft Company, and indicated: "More and more companies are employing technical specialists to fill the gap between buyers, engineers, and plant operating management."⁴⁶

Aggregate Data

Although an increasing number of articles began appearing after World War II on staff purchase research practices in specific companies, there have been few attempts to study the prevalence, organization, and practices of staff purchase research in the aggregate. No literature was found which reported the results of any extensive study of the staff purchase research function. What information is available on the prevalence, organization, and practices of the staff purchase research function in the aggregate has been largely a "by-product" of a study directed at some other aspect of purchasing. The four studies which did present some aggregate information on the staff purchase function are reviewed in this section.

⁴⁵"Purchase Analysis Cuts Costs, Sharpens Buying Skills," Purchasing, XLVII (November 9, 1959), pp. 78-79.

⁴⁶"How Brain Trusters Span P.A. -- Engineering Gaps by Purchasing Research," Purchasing Week, IV (April 10, 1961), pp. 24-25.

1. 1948 N.I.C.B. Study

In 1948 the National Industrial Conference Board made a study of purchasing practice in industrial firms, drawing data from nearly 300 companies, in 25 industry classifications.⁴⁷

No data were given on the practice of purchase research by staff in these companies; however, one of the main findings of this study was:

An increase is reported in purchase price analysis and material research activity in anticipation of the return of normal supply conditions. A number of companies have set up, or are now organizing, separate staff divisions within their purchasing departments to conduct this work. These divisions are manned by personnel with economic, engineering, production and purchasing backgrounds.⁴⁸

Also, in discussing the increasing recognition being accorded to purchasing, it was concluded:

Of particular interest is the growth in purchasing research. Progressive management has become increasingly aware of the value of current and pertinent data concerning price, supply and demand trends, and future prospects which can be supplied by procurement specialists who are in constant touch with the market. Such specialists can often make significant contributions to reduced production costs by uncovering new sources of supply and substitute materials, by assisting in the work of standardization, and by suggesting new and more efficient manufacturing techniques to suppliers.⁴⁹

⁴⁷Purchasing for Industry, Studies in Business Policy No. 33 (New York: National Industrial Conference Board, 1948), 40 pages.

⁴⁸Ibid., p. 1.

⁴⁹Ibid.

These conclusions indicate that organized purchasing research was being recognized as a separate function, best performed by specialists. Data on specific company practice, as shown by the trade magazine articles discussed previously, appear to bear out the trend suggested by this N.I.C.B. study.

2. 1956 Berry Study

In 1956, Harold A. Berry conducted a survey "of 350 nationally recognized leaders of the purchasing profession,"⁵⁰ directed at gathering information about the organization of the purchasing functions within industry. As part of this survey, information was obtained on the employment of purchasing engineers and cost or value analysts. This survey found that purchasing engineers were employed by 15% of the reporting companies. Six and two-tenths percent of those companies with purchases of less than five million dollars annually employed purchasing engineers, 15.1% of those with purchases of from five to fifty million dollars annually, and 51.5% of those with purchases of over fifty million dollars annually.⁵¹

⁵⁰Conversation with this author indicated this represented actual responses from 350 leading members of the National Association of Purchasing Agents.

⁵¹George W. Aljian (ed.), Purchasing Handbook (New York: McGraw-Hill Book Company, Inc., 1958), Sec. 2, p. 33.

Purchase engineers were defined as doing specification analysis; estimating production costs of new purchased parts, and cost changes due to engineering changes; reviewing equipment and facility lists submitted by potential vendors; and serving as liaison between purchasing and engineering on technical problems.

This same survey also presented data on companies employing purchasing research specialists. The following table was presented, which indicated the use of cost or value analysts within the survey group. As might be expected, greater use was made of these positions in the larger companies.

"Table 2-9. Companies employing cost or value analysts"⁵²

	Under \$5 Million, %	\$5-\$50 Million, %	Over \$50 Million, %	Total, %
Cost Analyst	3.1	5.0	36.4	7.8
Value Analyst	3.0	0.3
Procurement Research	3.0	0.3

3. 1959 Purchasing Magazine Survey

In 1959 Purchasing conducted a mail survey of "hundreds of purchasing agents" to determine the acceptance of value analysis programs. No information was given on the number or characteristics of the respondents. Value analysis was defined

⁵²Ibid., Table 2-9, Sec. 2, p. 34.

as "the study of the relationship of design, function and cost of any product, material or service with the object of reducing its cost through modification of design or material specifications, manufacture by more efficient processes, change in source of supply (external or internal) or possible elimination or incorporation into a related item."⁵³

To the question, "Does your company have a Value-Analysis Program?" 40% answered affirmatively. Of those answering "yes," 13% stated they had had such a program less than a year, 43% from one to three years, 13% from three to five years and 31% over five years. To the question "Who is responsible for value analysis at your company?" 77% indicated the purchasing department head; 28% said individual buyers; 27% said a committee; and 12% said value analysis specialists were responsible. (Respondents could check more than one answer.) It can be assumed that the value analysis specialists were staff personnel.

4. 1960 Michigan State University Survey

In 1960 a mail survey was conducted by graduate students in the Department of Personnel and Production Administration, College of Business and Public Service, Michigan State University, primarily for the purpose of determining personal

⁵³"Purchasing's Stake in Value Analysis," Purchasing, XLVI (June 8, 1959), p. 45.

characteristics and mobility patterns of purchasing executives.⁵⁴ A questionnaire was sent to 500 purchasing executives with the titles of Vice-President of Purchases, Director of Purchasing, Purchasing Agent, or Materials Manager in the states of Illinois, Indiana, Michigan, Ohio, Pennsylvania, and Wisconsin. The names of these executives were selected from the mailing list of one of the trade magazines, and all executives were in durable goods manufacturing firms. Specifically, the sample was made up of executives in the following six industries: Primary Metals; Fabricated Metal Products; Machinery, except Electrical; Electrical Machinery, Equipment, and Supplies; Transportation Equipment; and Miscellaneous Manufacturing. A 43% usable response was received.

To gain a further indication of the advisability of making this present study on the staff purchase research function in major United States industrial firms, this author requested that questions be added to the above questionnaire which might provide some answers to the prevalence of the staff purchase research function, its growth trend, and the number of personnel employed in a staff purchase research capacity in those

⁵⁴ Tom H. McKinney, William A. Sykora, and Robert T. Valentine, "A Study of Purchasing Administrators in the Metal Fabricating and Assembly Industries in Illinois, Indiana, Michigan, Ohio, Pennsylvania, and Wisconsin" (unpublished study by graduate students in the Department of Personnel and Production Administration, Michigan State University, 1960), 62 pages.

firms surveyed. Three questions on purchasing research were included at the close of the questionnaire, as follows:

"Do you have one or more individuals in a staff position within the purchasing department who devote 50% or more of their time to some phase of purchasing research?

- a. If yes, how many individuals are in such a capacity?
- b. In what year was such a position first established?"

Results of the questionnaire showed that 35% of the respondents had "individuals within the purchasing department who devote 50% or more of their time to some phase of purchasing research." The size of the firm (measured by annual sales) appeared to have had a direct influence on the use of purchase research personnel. Of the firms in the \$1-10 million category, and the \$10-15 million category, 31% and 27%, respectively, had purchase research personnel. Twenty-nine percent of the firms in the \$50-100 million category had research personnel, while of the firms in the \$100-500 million category, and the over \$500 million category, 42% and 63%, respectively, had staff purchasing research personnel.

The average number of research personnel employed by firms with such personnel was 5.5. The firms in the larger size categories had the largest average number of research personnel. One of the firms in the largest size category (over \$500 million annual sales) reported 150 persons in a

purchase research capacity; another in this category reported a staff of 40.

The relatively recent appearance of staff purchase research personnel also was shown by the survey. Thirty-three, or over 53% of the 62 firms with purchase researchers which indicated the date such a position was first established, indicated establishment of the position between the years of 1956 and 1960. An additional 20, or 32% of the 62 respondents answering this question, established their first purchase research position in the years 1950 to 1955. Thus, in total, of the 62 firms with researchers responding to this question, 52, or 84%, established their first purchase research position in the last ten years (1950 or later), indicating the recent establishment of the staff purchasing research function, and its rapid growth.

The results of this preliminary survey were considered most encouraging, for they did indicate a substantial use of staff purchase research personnel by large industrial firms. Also, the results provided evidence that the growth in use of staff purchase research personnel was fairly recent and was sizeable, as had been suspected from the growing amounts of literature on this subject in trade magazines.

The data from this 1960 survey add to the confidence that can be placed in the results from this present study, for the

results of the two surveys did not substantially differ. Those differences that did occur probably can be explained by the characteristics of the sample. All firms in this earlier 1960 study were in metal working industries, while many other industries were also included in the present study.

The slightly higher average percent (35%) of firms utilizing staff research personnel in the 1960 study, compared to the average percent (32.6%) for this present study, is probably due to the fact that only durable goods manufacturing firms were included in the 1960 study, while many firms in other than durable goods manufacturing were included in the present study. This present study did find that 40% of firms in durable goods manufacturing industries utilized staff purchase research personnel.

Since the respondents in the 1960 study could not be identified, it was impossible to break the results down by specific industry for comparison of results with this present study.

Chapter Summary

As a background for this present study of the use of staff personnel for the performance of research in purchasing, a review was made of available literature on the use of research staff in purchasing. The literature review assisted

in formulating this present study for it showed the lack of published information on many of the aspects of staff purchasing research, but it did indicate increasing interest in the subject, and provided knowledge of the practices of staff purchase research in certain companies.

The first discussion of the staff purchase research function was found in two textbooks on purchasing which appeared in 1928. Both books recommended the use of specialized staff personnel within the purchasing department to collect, analyze, and present data to the buyer and administrator as a basis for better purchasing decisions. In one of the books the staff specialist was termed "Chief Clerk - Economics Division," while in the other book the staff specialist was termed "Purchasing Engineer." These books listed as research areas for the staff many of the areas presently researched by staff personnel.

Articles on the subject of the staff purchase research function began appearing in trade magazines following World War II, and such articles became increasingly frequent during the 1950's. The first company to receive large amounts of publicity through magazine articles on their staff organization for purchasing research was Ford Motor Company, which established its Purchase Research Department in the late 1940's. General Electric Company and United States Steel Company

established similar staff purchasing research activities in the late 1940's or early 1950's, and both companies also have received considerable trade magazine publicity on their purchasing research activities.

No extensive studies of staff purchasing research, in the aggregate, were found. At the request of this author, graduate students at Michigan State University who were making a study of the personal characteristics and mobility of purchasing executives included on their questionnaire three questions on the staff purchase research function. Two hundred eight firms in the metal working industry responded to the questionnaire, and 35% of these firms employed one or more individuals within their purchasing department who devoted 50% or more of their time to purchasing research. This study showed that those firms with staff research personnel had an average of 5.5 persons in that capacity, and that 84% of firms with staff first established such a position in the last 11 years (1950-1960).

The results of the 1960 unpublished survey at Michigan State University lend support to the results found in this present study, for essentially similar results on the number of companies utilizing a purchase research staff were found by both studies. The slight differences in results probably can be explained by the differences in the industries surveyed.

CHAPTER IV

RESEARCH METHODOLOGY

Introduction

Since staff purchasing research has never been the subject of an extensive study, the empirical phase of this study concentrated on staff purchasing research in the 500 largest industrial firms in the United States. To collect information for the study, several large industrial firms with staff purchasing research personnel were personally interviewed. Following this, a mail questionnaire was utilized to collect information on purchasing research, as practiced by the 500 largest United States industrial firms. The information obtained on purchasing research in those firms without a purchasing research staff was utilized as a control against which to compare the information obtained on purchasing research by those companies with a purchasing research staff.

Company Interviews

1. Selection of Companies

To gather specific information about the practices of purchasing research staffs, interviews were conducted with purchasing personnel in ten large industrial firms which used

a research staff within the purchasing department. The firms selected for interview were industrial firms and not merchandising or service firms, since this study was limited to purchasing research in industrial firms. Also, all firms were on the Fortune list of "The 500 Largest U. S. Industrial Corporations."¹ In the interviewed firms, information was obtained on purchasing research practices such as: topics researched, research results produced, research procedures, organizational structure, backgrounds of research personnel, evaluation of purchasing research, and status of the staff purchasing research function.

Although complete anonymity of the ten interviewed companies is being maintained, a summary of their industrial classifications and dollar sales is shown in Tables 4-1 and 4-2.

Table 4-1. Companies interviewed, by standard industrial classification (Bureau of the Budget, 1957)

Classification Number	Industry	Number of Companies
28	Chemicals and Allied Products	3
32	Stone, Clay, and Glass Products	1
33	Primary Metals	2
35	Machinery, except Electrical	1
36	Electrical Machinery, Equipment & Supplies	1
37	Transportation Equipment	<u>2</u>
	TOTAL	10

¹"The Fortune Directory: The 500 Largest U.S. Industrial Corporations," Fortune, LXII (July, 1960), pp. 131-50.

Table 4-2. Companies interviewed, by dollar sales, 1959

<u>Dollar Sales</u>	<u>Number of Companies</u>
\$100 - 499 million	4
\$500 - 999 million	3
\$1 billion and over	3
	<hr/>
TOTAL	10

2. Interview Procedure

Personal interviews, each requiring two to four days time, were conducted during the summer of 1960 in nine of ten companies. The tenth company was interviewed in April, 1961. All interviews were conducted in the home office of the company and thus little information was gathered on activities of staff research personnel located geographically apart from the headquarters office. Only personnel within the purchasing or materials departments were interviewed, and about 90% of the total interview time was spent with staff purchasing research personnel.

The interviews were of a non-directive nature, although the interviewer did use an interview outline. The sincere cooperation of those people and companies who gave freely of their time to make these interviews possible is greatly appreciated.

3. Limitations of Interviews

The companies interviewed were not randomly selected, but instead, were ones known to utilize staff purchasing research personnel. No information was collected on purchasing research which might have been performed by other departments within the companies, such as Traffic, or Methods and Procedures. Although all interviews were two or more days in length, adequate time was not available in any given company to pursue all aspects of purchasing research.

The Mail Questionnaire

1. Development and Pretest

Based on the interviews conducted during the summer of 1960, a questionnaire on purchasing research was developed. During the fall of 1960 this questionnaire was pretested with the 22 purchasing executives attending the 1960 Executive Seminar in Purchasing and Materials Management at Michigan State University. After these purchasing executives had completed this preliminary questionnaire, interviews were conducted to determine inconsistencies in, or misinterpretations of, the questions. Based on this pretest, the questionnaire was modified and a revised questionnaire was mailed during February, 1961, for further pretest, to 26 purchasing executives known to be interested in cooperating with this study.

Included in this pretest was the chief purchasing executive in each of the companies in which interviews had been conducted. Based upon the results of this pretest, the final cover letter and questionnaire were developed (Appendix 1).

2. Mailing List

The mailing list used was the 1960 Fortune list of the "500 Largest U. S. Industrial Corporations."² Nine firms were deleted from this list, either because the firm was primarily a holding company, because it was known that company policy would preclude completion of the questionnaire, because the company had no centralized purchasing function, or because the name and title of the appropriate chief purchasing executive could not be located. Thus, the final mailing list was composed of 491 corporations.

The name and title of the chief purchasing or materials executive in each of the 491 companies was obtained primarily through the use of directories such as Poor's Register of Directors and Executives³ and the Standard Advertising Register.⁴ Each firm's primary industrial classification was

²Ibid.

³Poor's Register of Directors and Executives: United States and Canada (New York: Standard and Poor's Corporation, 1961), 3198 pages.

⁴Standard Advertising Register (New York: National Register Publishing Company, Inc., Vol. XLV (April, 1960), 2076 pages.

determined from the 1961 Dun and Bradstreet Million Dollar Directory,⁵ and the company size by 1959 net dollar sales as given in the Fortune list.⁶

3. Mailing and Response

Each questionnaire, accompanied by an individually typed and addressed cover letter, was mailed to be received by the chief purchasing executive in each company on Tuesday, March 21, 1961. Enclosed with the questionnaire was an air mail return envelope, and a return postal card for use by respondents who wished to request a summary of the completed study. Within two weeks, a 35% response had been received. At that time the follow-up letter was mailed to those executives who had not responded (Appendix 1). By the cut-off date of April 24th, 304 replies, a 62% usable response, had been received. The size and industrial classification of the 491 companies sampled, and the 304 usable responses, are given in Table 4-3.

An additional 31 responses were received, but not used for one of the following reasons: inconsistent answers, letters indicating unwillingness to take the necessary time to complete the questionnaire, indications of company policy precluding

⁵1961 Dun and Bradstreet Million Dollar Directory (New York: Dun and Bradstreet, Inc., 1960), 3328 pages.

⁶"The Fortune Directory," loc. cit.

Table 4-3. Mailing list by industrial classification and company size (1959 sales in millions of dollars)

Standard Industrial Classification (Bureau of the Budget, 1957, Revised)		Number of Companies				
		Mailing List			Usable Responses	
Classi- fication Number	Classification Description	Under 100	100- 499	500- 999	Over 1000	To- tal
10	Metal Mining	3	4		1	2
11, 12	Coal Mining	1	4		1	4
13	Crude Petroleum and Natural Gas	5	10	4	5	15
14	Mining and Quarrying of Non- metallic Minerals, except Fuels		1		1	1
16	Construction other than Build- ing Construction - General Contractors					
19	Ordinance and Accessories	1	1		1	1
20	Food and Kindred Products	10	53	4	7	42
21	Tobacco Manufacturers	1	3	2	1	4
22	Textile Mill Products	5	13	1	3	9
23	Apparel and Other Finished Products Made from Fabrics	1	3		1	1
24	Lumber and Wood Products, except Furniture	2	5		1	5
25	Furniture and Fixtures	1	1			0
26	Paper and Allied Products	8	11	1	3	16
27	Printing, Publishing and Allied Industries	3	6		2	5
28	Chemicals and Allied Products	10	33	6	7	33

Table 4-3. Continued

Standard Industrial Classification (Bureau of the Budget, 1957, Revised)		Number of Companies				
Classi- fication Number	Classification Description	Mailing List			Usable Responses	
		Under 100	100- 499	500- 999	Over 1000	To- tal
29	Petroleum Refining and Related Industries	2	4	1	2	9
30	Rubber and Miscellaneous Plastics Products	1	1	4	2	8
31	Leather and Leather Products	5	4			4
32	Stone, Clay and Glass Products	8	12	2	19	47
33	Primary Metal Industries	9	28	8	3	49
34	Fabricated Metal Products, except Ordnance, Machinery and Transportation Equipment	14	10	1	2	27
35	Machinery, except Electrical	11	21	1	4	37
36	Electrical Machinery, Equipment and Supplies	7	31	5	8	51
37	Transportation Equipment	4	2	1		7
38	Professional, Scientific, and Controlling Instruments; Photographic and Optical Goods	1	2			3
39	Miscellaneous Manufacturing Industries	113	294	46	38	491
	TOTAL	2	4	1	2	9
		1	4	1	2	8
		5	12	2	19	47
		9	28	8	3	49
		14	10	1	2	27
		11	21	1	4	37
		7	31	5	8	51
		4	2	1		7
		1	2			3
		113	294	46	38	491
		2	4	1	2	9
		1	4	1	2	8
		5	12	2	19	47
		8	28	8	3	47
		9	10	1	2	22
		14	29	4	2	49
		11	21	1	4	37
		7	31	5	8	51
		4	2	1		7
		1	2			3
		113	294	46	38	491
		60	180	35	29	304

return of the questionnaire, or questionnaire returned too late to be included in the punch card tabulation and summarization of the responses.

In all but six of the 26 industrial classifications at least a 50% response was received. All industrial classifications with less than a 50% response, or with small numbers of companies responding, were either dropped due to no response, or merged with other industrial classifications to maintain anonymity of the responding companies, as follows:

SIC #16 (Construction other than Building Construction - General Contractors) and SIC #25 (Furniture and Fixtures) were the only two industrial classifications with no responses and therefore were deleted in presentation of data by industrial classification. Each of these two classifications had only two firms in the original sample.

Classifications merged to preclude individual company identification and to produce industrial classification cells of more meaningful size were: the 47% response in SIC #22 (Textile Mill Products) and the 25% response in SIC #23 (Apparel and other Finished Products made from Fabrics); the 29% response in SIC #10 (Metal Mining) and the 80% response in SIC #11 and #12 (Coal Mining); the 43% response in SIC #38 (Professional, Scientific, and Controlling Instruments; Photographic and Optical Goods), the 75% response in SIC #31

(Leather and Leather Products), the 67% response in SIC #39 (Miscellaneous Manufacturing Industries), and the 50% response in SIC #19 (Ordnance and Accessories).

4. Limitations of Questionnaires

The following are some of the possible limitations of the data and analysis resulting from the mail questionnaire:

a. Not Necessarily Random Sample--Since there is no assurance that the 304 companies responding were a random sample, the results of this questionnaire may not conform exactly to the entire population of the 500 largest industrial firms in the United States. However, the large number (304) and the high percentage of usable responses (62%) tends to establish confidence in the data collected by this questionnaire, and is considerably higher than that obtained by most studies of this nature.⁷ Since this study has been limited to staff purchasing

⁷For example, Richard D. Crisp, Company Practices in Marketing Research, Research Report No. 22 (New York: American Management Association, 1953). In this study 425 questionnaires were mailed to companies selected from the "most recent AMA mailing list." 180 questionnaires were completed and included in this survey, or a 42.4% return.

In 1959 the American Marketing Association (Chicago) published A Survey of Marketing Research. To gather data for this report, 2892 questionnaires were sent to member firms in the American Marketing Association, and 575 additional questionnaires were sent to firms belonging to other national associations. The total return was 39%. Their comments in the Forward: "No claim can be made that the results of a mail survey such as this can be projected to the entire universe of companies. The large number and satisfactory percentage of returns, however, lend credence to the findings."

research in only large industrial firms, obviously the results cannot necessarily be projected to smaller firms.

Analysis of Table 4-3 shows that a high usable response percentage was obtained for both total company size cells (as measured by 1959 net sales), and most total standard industrial classification cells. A 53% usable response was received from the total number of companies in the under \$100 million category; a 61% response in the \$100-499 million category, and a 76% response in both the \$500-999 million and over \$1,000 million categories.

This high usable response percentage by both size cells and by the majority of standard industrial classification cells provides further evidence to support confidence in the results of this survey.

b. Scope of Answers--In some of the 491 companies which received questionnaires, there was no corporate level purchasing organization, but instead purchasing was autonomous within major divisions of the corporation. In these companies, the questionnaire was sent to the chief purchasing executive of

In 1960 the American Management Association (New York) published a study entitled Purchasing Department Organization and Authority, AMA Research Study 45, based upon a questionnaire sent to the purchasing executive of 750 companies selected at random from Poor's Register of Directors and Executives. A 19% reply was received, "a response remarkably high for a seven-page questionnaire."

one of the major divisions. While the cover letter and questionnaire requested the executive to answer for his company, there is evidence that some of the respondents answered for only their own division, rather than the company as a whole. Such cases are few in number, and, considering the total number of companies responding, probably have had little effect on the total results.

c. Thoroughness or Frequency of Research Not Determined--

The respondent was asked only to indicate the topics on which purchase research was done in his company during 1959 or 1960. From the responses one can make conclusions only about the number of topics researched. No conclusions are possible concerning how frequently, in a given company, research was done on a particular topic; how thoroughly the research was done; or how much time was spent, beyond the "minimum total of one day's time," in research on a particular topic.

d. Possible Misinterpretation of Questions--The topics on which the respondent was asked to indicate whether or not research was done in 1959 or 1960 were not defined, nor were the terms "purchase research staff," "buyer," or "administrator," in the interests of keeping the questionnaire as short as possible. Although all terms employed in the questionnaire are commonly-used ones, various shades of interpretation were possible, and some unknown degree of error may have been

introduced into the results because of possible misinterpretation.

e. Limited Statistical Analysis Made -- Since there was no assurance that the responses to the questionnaire represented a random selection of companies, no elaborate statistical analysis was attempted. The large amounts of data obtained, however, and the conclusions drawn from these data, should provide a basis for a more refined future analysis.

Analysis of Data

Based on the questionnaire responses, conclusions can be drawn regarding the following aspects of the staff purchasing research function: prevalence, growth, relation to company size and industrial classification, number of personnel, topics researched, research results, involvement of personnel in research, related research activities performed, data sources used, and future growth. Where possible, on each of the above aspects of purchasing research, a comparison was made between the group of companies which had staff and that group of companies which did not have a research staff.

1. Research Done and Results

To assist in presenting information on the probable effect of staff purchasing research, the following three new measures have been employed:

a. Occurrence Factor--The occurrence factor measures the probable effect which the presence of a research staff had on the number of companies which researched a topic. It is the ratio of the percent of companies with staff to the percent of companies without staff which indicated research on a topic.

Thus, if on a given topic 50% of the companies which had a purchase research staff indicated this topic was researched, and 25% of the companies without staff indicated research on this topic, the occurrence factor would be 2. This occurrence factor of 2 shows that twice as large a percentage of companies with staff researched the topic than was done by companies without staff, and provides an indication of the increased probability of companies researching a topic when they have a purchase research staff.

An occurrence factor greater than 1 means that a larger percent of companies with staff researched a topic or group of topics than the percent of companies without staff which researched the topic. A factor of less than 1 means that the percent of companies with staff which researched the topic was less than the percent of companies without staff. The occurrence factor provides no indication as to the quantity of research done on a particular topic (in excess of one day's time) or the number of times a particular company researched that topic.

b. Benefit Factor--The benefit factor is the ratio of the percent of companies with staff to the percent of companies without staff which declared a topic as having produced most worth-while results.

Thus, an occurrence factor greater than 1 would indicate that the percent of companies which had a research staff and declared a topic as having produced most worth-while results was larger than the percent of companies without staff which declared the topic produced most worth-while results. This factor provides an indication of the effect of the presence of staff on the likelihood of a particular topic being judged to produce most worth-while results, and is affected by two things: first, the results achieved from research, and second, the percent of topics researched (obviously, if a topic was not researched it could not have produced most worth-while results).

c. Evaluation Factor--The evaluation factor provides an indication of the probable effect of the presence of a purchase research staff on the evaluation of results from topics actually researched. This factor is the ratio of the percent of companies with staff to the percent of companies without staff which declared most worth-while results produced when a topic was actually researched.

Thus, an evaluation factor greater than 1 would indicate

that a larger percent of companies with staff declared most worth-while results on a topic actually researched than was declared by companies without staff which researched the same topic. This evaluation factor gives an indication of the value of research done on a particular topic in those companies which had staff, compared to companies without staff.

2. Involvement of Personnel

An analysis was made of the involvement of the administrator, and the buyer, in purchasing research in both companies with, and without, staff. To indicate the probable effect that the presence of a purchase research staff had on the involvement of these personnel in research, the percentage involvement of both the administrator and the buyer in companies with staff was compared to the involvement in companies without staff. This comparison of involvement was computed on two bases: (1) the percent of companies in which each category of personnel was involved in research on a topic, and (2) the percent of companies actually researching a topic in which each category of personnel was involved. In addition, data are presented to show the involvement of purchase research personnel in research in companies which had staff.

Chapter Summary

This study on the staff purchase research function was based on empirical evidence gathered by two principal methods. Interviews, each lasting from two to four days, were conducted in the summer of 1960, and April of 1961, with purchasing personnel in ten large United States industrial firms, to determine information such as the following: method of organization for purchasing research; operating procedures; status of purchasing research; background of personnel doing research; and types of projects engaged in. The ten companies interviewed all had one or more personnel primarily in a staff purchasing research capacity.

The second source of information on the practice of purchasing research was a mail questionnaire sent, by name and title, to the chief purchasing or materials executive in 491 of the companies listed in the Fortune "Directory of the 500 Largest U. S. Industrial Corporations."⁸ The questionnaire was mailed to be received on March 21, 1961, and a follow-up letter was sent on April 4, 1961 to all executives who had not responded. As of April 24th, 304 usable questionnaires had been received, or a 62% usable return.

No claim is made that the results from this mail questionnaire can be projected to the total population of major United

⁸"The Fortune Directory," loc. cit.

States industrial firms, for the responses were not necessarily random in character. However, the large percentage of usable returns permits confidence in the findings, and provides valuable and hitherto unavailable information on purchasing research.

Based on the questionnaire responses, conclusions can be drawn on the following aspects of the staff purchasing research function: prevalence, growth, relation to company size and industrial classification, number of personnel, topics researched, research results, involvement of personnel in research, related research activities performed, data sources used, and future growth. Where possible, on each of these aspects of purchasing research, a comparison was made between companies with, and those without, staff in the following chapters.

Three new measures were employed to present information on the probable effect of a purchase research staff: (1) Occurrence Factor, a ratio of the percent of companies with staff to the percent of companies without staff which researched a topic. This factor provides an indication of the effect of presence of research staff on the probability of a topic being researched; (2) Benefit Factor, a ratio of the percent of companies with staff to the percent of companies without staff which declared a topic as having produced most worth-while

results. This factor provides an indication of the effect of the presence of research staff on the likelihood of a particular topic being judged as having produced most worth-while results; and (3) Evaluation Factor, a ratio of the percent of companies with staff to the percent of companies without staff which declared most worth-while results produced when a topic was actually researched. This factor provides a general indication of the effect of the presence of research staff on the value of research done.

CHAPTER V

GROWTH AND ORGANIZATION

Prevalence

Of the 491 questionnaires mailed to the chief purchasing executive in large United States industrial firms, 304 usable responses were received.

Almost one-third of the companies responding utilized staff purchase research personnel. Ninety-nine (32.6%) of the 304 companies which responded indicated that one or more staff purchasing research personnel were employed within their purchasing department. Two hundred five companies (67.4%) reported they had no staff purchasing research personnel. The fact that almost a third of the responding firms had one or more staff purchasing research personnel indicates that a significant number of large industrial firms have accepted the staff approach to purchasing research.

The percent of responding companies which indicated utilization of staff purchasing research personnel remained almost constant for the questionnaires received in each of the five weeks during which questionnaires were being returned. Given this response pattern, it appears that had all of the 491 questionnaires been returned, the percent of companies which reported use of a purchase research staff would not have

differed noticeably from that indicated by the 304 responses received.

History

The current literature on purchasing research indicates that the staff purchase research function is a relatively recent phenomenon. The Ford Motor Company, which established full-time purchase research positions within the purchasing department in the late 1940's, usually has been pointed to in the presently available literature as the first organization to formally establish the staff purchase research function.¹ Results of this present survey, however, indicate that staff purchase research personnel were utilized in several companies considerably prior to World War II.

At least six companies in the survey group reported the assignment of at least one person to purchase research prior to World War II. One corporation, in the Chemical Industry, indicated establishment of a formal purchase research function in "1900 or earlier"; another firm, in the Electrical Machinery, Equipment, Supplies Industry, established its staff purchase research function in 1926. Four firms indicated establishment

¹The first article on the Ford Purchase Analysis Department appeared in the December 1947 issue of Purchasing, and was subsequently followed by other articles on the Ford organization. (Chapter III gives a chronology of these articles.)

of the staff function in 1930: one in the Transportation Equipment Industry, one in Paper, one in Chemicals, and one in Food and Tobacco.² While these dates must be accepted as approximations, due to the difficulty the present chief purchasing executive of a firm would have in pinpointing exactly an organization change which occurred over 30 years ago, there is evidence that the staff purchase research function had been established many years ago in some companies. Thus, staff purchase research is not solely a post-World War II development, as people have been led to believe. The lack of knowledge about, and publicity on, the development of this function may be due partly to the unwillingness of those firms early using staff purchase research to make public an approach which gave a competitive advantage, and partly because no known attempt was made in the past to make any comprehensive study of the subject.

The establishment of the staff purchase research function has enjoyed its major growth during the last ten years. Eighty-seven percent of those companies surveyed which had staff purchasing research personnel and furnished the date of

²Possibly the books by Gushée and Boffey, and by Harriman (see Chapter III), both of which appeared in 1928 and strongly recommended the establishment of staff specialists within the purchasing department, had some influence on the actions of these four companies.

establishment of the function started the activity during 1950 or later. Chart 1 graphically presents data on the post-World War II growth pattern in the establishment of this function. Table 5-1 presents data on the year in which a person was first assigned to purchase research in the 78 companies with staff which furnished the date when the purchase research staff was first established. By five-year intervals, the growth pattern of establishments followed this pattern: six companies (8%) established their staff purchase research activity prior to 1941; none indicated establishment of the function between 1941-1945; nine (11%) established the function between 1946-1950; 21 (27%) between 1951-1955; and 37 (47%) between 1956-1960. Of significance is the fact that over the last fifteen years (1946-1960) the number of new establishments of the staff purchase research function has approximately doubled every five years.

The year 1960 was the largest single year for establishment of the function, for seventeen (22%) of the companies with staff furnishing date of establishment indicated this as the year in which a man first was assigned to purchase research. A projection of the number of companies first establishing the function in the first quarter of 1961 (five) indicates that 1961 may well become the year with the largest number of establishments. Certainly there is an increasing growth

Chart 1. Growth in establishment of the staff research function

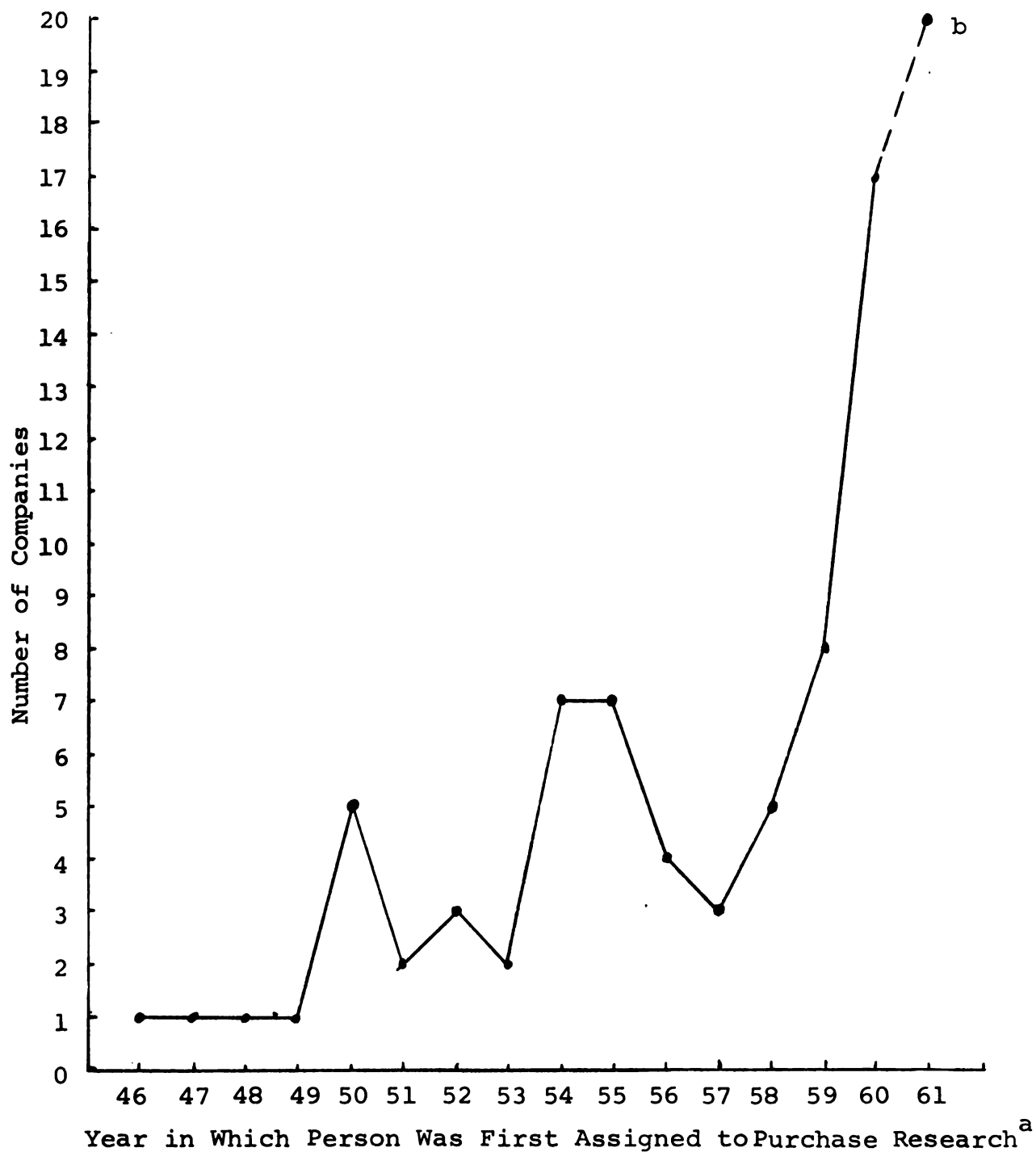


Table 5-1. Year man first assigned to purchasing research,
by company size

Year of Establishment	Number of Companies, by Size (1959 Sales, Million Dollars)					Cumulative Total
	Under 100	100-499	500-999	1000 and over	Total	
1961 (1st Q)	2	3			5	78
1960	1	13	2	1	17	73
1959	1	4	2	1	8	56
1958		2	1	2	5	48
1957		1	1	1	3	43
1956		3		1	4	40
1955		5	1	1	7	36
1954		5	2		7	29
1953		2			2	22
1952	1	1		1	3	20
1951		1		1	2	17
1950		2	1	2	5	15
1949		1			1	10
1948				1	1	9
1947				1	1	8
1946				1	1	7
1940-45						7
1930-39		1 ^a	2 ^a	1 ^a	4	6
Before 1930			1 ^b	1 ^c	2	2
No. cos. supply- ing date of establishment	5	44	13	16	78	
No. cos. <u>not</u> supplying date	3	15	1	2	21	

^a1930.^b1900.^c1926.

pattern in the establishment of staff purchasing research.

The following three factors may have influenced the historical growth pattern in establishment of staff purchase research: First, although no companies indicated establishment of the function during World War II, it was during this period that some purchasing departments added specialized personnel, such as special expeditors and sub-contract specialists, to help solve some of the difficult materials problems of the war years. The experience that purchasing departments had with these specialists may have provided the impetus in some companies for the later utilization of another specialist, the staff purchase researcher. Second, the pattern of establishment appears to show some relationship to the business cycle. Chart 1 shows that the number of companies newly establishing the staff research function dropped in 1951, 1953, and 1956-57. These years generally are conceded to have been of a recession nature. The business slow-down of 1960 does not appear, however, to have affected the trend in new establishments. Only three of the 304 reporting companies indicated they had discontinued, or reduced resources devoted to, the staff purchase research function during 1959 or 1960. The third comment on the growth pattern concerns the increased growth beginning in 1950. It was at about this time that increasing numbers of articles describing specific companies'

activities in this area began appearing in trade magazines. These articles may have had considerable influence on other companies' actions in establishing a purchase research staff.

Relation to Company Size

The utilization of purchase research staff increased as company size increased. Table 5-2 shows, by 1959 net sales categories, the percent of companies in each category which utilized staff purchase research personnel. The percent of companies in the largest dollar sales category (over \$1 billion) which utilized research staff was 4.6 times greater than the percent of companies in the smallest dollar sales category (less than \$100 million).

Table 5-2. Relationship between company size and utilization of purchase research staff

Company Size (1959 Dollar Sales)	Number of Respondents	Number w/ Purchase Research Staff	Percent of Companies Utilizing Purchase Re- search Staff
Under 100 Million	60	8	13.3%
100 - 499 Million	180	59	32.8%
500 - 999 Million	35	14	40.0%
1,000 and Over	29	18	62.1%
TOTALS	304	99	
AVERAGE PERCENT			32.6%

The utilization of purchase research staff was greater in companies with larger purchasing staffs. Table 5-3 shows that those companies in the larger dollar sales categories did have larger purchasing staffs, and also that there was a general pattern of increased utilization of purchase research staff with increased purchasing department size. In those companies with not over 25 persons in purchasing (exclusive of secretarial and clerical), only 20% made use of research staff; in those with between 26 and 50 persons in purchasing, 27% had staff; in those with between 51 and 75 persons, 52% had staff; in those with between 76 and 100 persons, 60% had staff; while in companies with over 100 persons in purchasing, 70% had a purchase research staff.

There was also, as might be expected, a relationship between company size and the year in which a person was first assigned to purchasing research. Those companies in the larger size categories, on the average, had established the purchasing research function earlier. Of the six companies which reported establishment of staff purchase research prior to World War II, six were in the two largest dollar sales categories. Table 5-1, previously referred to, shows that half of the companies with staff in the over \$1 billion sales category had established the staff by the year 1951. Half of the firms in the \$500-999

Table 5-3. Relationship between size of purchasing organization and utilization of staff purchase research personnel

Total No. of Personnel in Purchasing Exclusive of Secretary and Clerical	Number of Companies, by Size (1959 Sales, Million Dollars)						Percent Companies with Purchase Research Staff				
	Under 100		100-499		500-999			1,000 & Over			
	w/ staff	w/o staff	w/ staff	w/o staff	w/ staff	w/o staff		w/ staff	w/o staff		
1-5	0	12	2	16	0	1	0	0	2	29	6%
6-10	1	17	5	15	0	0	0	0	6	32	16%
11-15	4	11	1	18	2	0	0	0	7	29	19%
16-20	1	3	8	16	0	3	0	0	9	22	29%
21-25	0	2	7	6	0	3	0	0	7	11	39%
26-30	0	2	1	5	0	3	0	0	1	10	9%
31-35	0	1	3	9	0	1	0	1	3	12	20%
36-50	0	1	8	12	1	3	0	0	9	16	36%
51-75	0	0	9	8	2	2	2	2	13	12	52%
76-100	1	1	4	3	1	1	3	1	9	6	60%
Over 100		1	7	3	5	1	9	4	21	9	70%
No Answer ¹	1	1	4	10	3	3	4	3	12	17	41%
TOTALS	8	52	59	121	14	21	18	11	99	205	

¹Twenty-nine respondents did not indicate the number of personnel, exclusive of secretarial and clerical, in their purchasing organization.

million category had established a staff by 1954; in the \$100-499 million category by 1957; while in the smallest size category (under \$100 million) it was not until 1959 that half of the companies had established a research staff.³

Relation to Industry Classification

Three industries stand out as ones in which the trend in establishment of the staff purchase research function appeared earliest: Chemicals; Electrical Machinery, Equipment, and Supplies; and Transportation Equipment. Table 5-4 presents data, by industry classification, showing the year in which the purchase research function was first established in the 78 companies with staff which provided these data.

The industries in which a majority of the firms with staff had established the research function before 1956 are as follows (percent indicates number with staff which established the staff function prior to 1956): Food and Tobacco (67%), Paper (67%), Electrical Machinery, Equipment, and Supplies (75%), Chemicals (58%), Transportation Equipment (61%), and Primary Metals (63%).

In seven industries a large percent of those companies with staff established the function only in the last two years (1959 or later): Crude Petroleum and Natural Gas (80%), Textile Mill Product and Apparel, only one firm (100%), Lumber

³Approximately half of the companies in both groups indicated their purchasing organization was primarily centralized. (Question 1); thus, these data were not used for further analysis in this study.

Table 5-4. Year person first assigned full-time to purchase research, by industrial classification

SIC No.	Industry Description	Number of Companies Which Established Staff, by Year of Establishment ^a																		Before 1930
		Cos. Staff w/	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	40-45	
10,11 12,14	Mining	2	1																	
13	Crude Petroleum & Natural Gas	7	1 1 2										1							
20,21	Food and Tobacco	9	1		1						1	1	1							1
22,23	Textile Mill Product and Apparel	1	1																	
24	Lumber & Wood Products	1	1																	
26	Paper	3	1									1							1	
27	Printing and Publishing	0																		
28	Chemicals	13	4		1				1	2			1			1			1	1
29	Petroleum Refining	0																		
30	Rubber and Plastics	0																		
32	Stone, Clay and Glass	4	1 1						1											
33	Primary Metals	10	1 1							2	3									

Table 5-4. Continued

SIC No.	Industry Description	Number of Companies Which Established Staff, by Year of Establishment																	Before 1930	
		Cos.w/ Staff	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946		40-45
34	Fabricated Metal Products	5	1	1	1	1				1										
35	Machinery except Electrical	14	1	3	1	1	1					1							1	
36	Elec. Machinery, Equipment, Supplies	9	1			1		1			1	1	1		1					1
37	Transportation Equipment	17	1	1	1	1	2	3	2				1	1			1			
19,31,38,39	Ordnance; Leather; Profes- sional, Scientific, and Optical; Miscellaneous Manufacturing	4	1	1	1															
TOTALS		99	5	17	8	5	3	4	7	7	2	3	2	5	1	1	1	4		2

^aSince 21 companies did not indicate data, total of companies by industry classification may be smaller than number of companies with staff.

and Wood Products, only one firm (100%), Stone, Clay, and Glass (67%), Fabricated Metal Products (50%), Machinery, except Electrical (56%), and Ordnance; Leather; Professional, Scientific, and Optical Equipment; Miscellaneous Manufacturing (75%).

The staff purchase research function was much more prevalent in durable goods manufacturing than in non-durable goods manufacturing. Table 5-5 shows that the percent of firms with staff in the durable goods industries (40%) was nearly twice as large as the percent in the non-durable goods industries (21%). The percent of companies with staff in the Mining industry (41%) was the highest of all three groups. Within the durable goods manufacturing group, all of the industries primarily of a metal working nature had a relatively high percent employment of purchase research staff.

Table 5-6 presents data on the utilization of staff purchase research personnel, broken down by industrial classification and by company size. Analysis of this table shows that in certain industries, such as Crude Petroleum and Natural Gas, it is only in the larger size category that many firms had staff, while in other industries (such as Machinery, except Electrical), a relatively large percent of firms in all four size categories had purchase research staff.

Table 5-5. Percent of companies with staff in durable manufacturing, non-durable manufacturing, and mining

Percent with Purchase Research Staff	Industry	Manufac- turing, Durable		Manufac- turing, Non-durable		Mining	
		Total No. Cos.	No. Cos. w/Staff	Total No. Cos.	No. Cos. w/Staff	Total No. Cos.	No. Cos. w/Staff
47%	Crude Petroleum					15	7
47%	Machinery, except Electrical	30	14				
46%	Trans. Equipment	37	17				
44%	Ordinance, Leather; Scientific, Misc. Manufacturing	9	4				
39%	Chemicals			33	13		
38%	Electrical Mach., Equip., Supplies	24	9				
36%	Primary Metals	28	10				
33%	Fabricated Metal Products	15	5				
33%	Stone, Clay, Glass	12	4				
29%	Mining					7	2
20%	Food and Tobacco			46	9		
20%	Lumber and Wood	5	1				
19%	Paper			16	3		
10%	Textile Mill and Apparel			10	1		
0%	Printing & Pub.			5	0		
0%	Petroleum Refin.			6	0		
0%	Rubber & Plastics			6	0		
	TOTALS	160	64	122	26	22	9
Average percent with purchase research staff		40%		21%		41%	

Table 5-6. Utilization of purchase research staff, by standard

SIC Number(s)	Industry Description	No. Cos. in Sample	No. of Respon- dents
10,11			
12,14	Mining	13	7
13	Crude Petroleum & Natural Gas	26	15
20,21	Food and Tobacco	78	46
22,23	Textile Mill Products and Apparel	23	10
24	Lumber and Wood Products	7	5
26	Paper	21	16
27	Printing and Publishing	9	5
28	Chemicals	52	33
29	Petroleum Refining	9	6
30	Rubber and Miscellaneous Plastics	8	6
32	Stone, Clay, Glass	19	12
33	Primary Metals	47	28
34	Fabricated Metal Products	22	15
35	Machinery, except Electrical	49	30
36	Electrical Mach., Equipment, Supplies.	37	24
37	Transportation Equipment	51	37
19,31, 38,39	Ordinance; Leather; Professional, Scientific and Optical; Misc. Mfg.	16	9
	TOTALS	487	304

industrial classification and company size

Company Size (1959 Sales, Million Dollars)									
Under 100		100-499		500-599		1,000 & Over		Total	
w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
0	2	2	3	0	0	0	0	2	5
0	3	1	4	1	1	5	0	7	8
2	6	5	26	1	3	1	2	9	37
0	3	0	6	1	0	0	0	1	9
1	0	0	4	0	0	0	0	1	4
0	3	3	8	0	1	0	1	3	13
0	2	0	3	0	0	0	0	0	5
0	7	8	12	3	0	2	1	13	20
0	2	0	3	0	1	0	0	0	6
0	0	0	0	0	4	0	2	0	6
1	3	3	4	0	1	0	0	4	8
0	5	8	7	2	5	0	1	10	18
0	5	3	4	1	0	1	1	5	10
3	2	7	13	3	1	1	0	14	16
0	5	5	9	0	1	4	0	9	15
0	4	11	11	2	2	4	3	17	20
1	0	3	4	0	1	0	0	4	5
8	52	59	121	14	21	18	11	99	205

Size of Purchase Research Staff

Data were obtained by the mail questionnaire from 96 of the 99 companies which had a purchase research staff on the number of personnel employed in each of the following three types of purchasing research positions: purchase researcher, purchase research supervisor, and secretarial and clerical.

1. Total Personnel

Approximately half (49%) of the firms with a staff had a total of only one or two persons assigned to their purchase research staff. Twenty-three firms (24%) had a total of only one person, in all three job categories, assigned to their purchase research staff; 24 firms (25%) had a total of two persons in purchasing research (Table 7). Only eleven (11%) of the 96 firms with staff which furnished data on the number of personnel employed in purchasing research had a total staff of ten or more persons, but several of these eleven firms had relatively large numbers of personnel in purchasing research. One firm reported a total staff (all three job categories) of 225 persons; another firm reported a total staff of 53 persons.

These 11 companies with a total staff in purchasing research of ten or more persons were largely firms which had established their staff purchase research function relatively early. Four of these 11 firms had established the function

Table 5-7 Number of secretarial and clerical personnel in purchase research and total personnel in purchase research, by company size

Number of Persons	Number of Companies (1959 Sales, Million Dollars)									
	Under 100		100-499		500-999		1000 & Over		Total	
	Secr'y & Clerical	Total Personnel in PR	Secr'y & Clerical	Tl. Per- sonnel in PR	Secr'y & Clerical	Total Personnel in PR	Secr'y & Clerical	Total Personnel in PR	Secr'y & Clerical	Total Personnel in PR
0	4		20		3		7		34	
1	3	3	22	14	5	2	1	4	31	23
2		3	7	18	2	2	2	1	11	24
3			5	6	2	3	1	2	8	11
4	1		2	3		1	3	3	6	7
5		1		5	1	3	1		2	9
6				2	1				1	2
7				4		1		1		6
8				2			1		1	2
9		1								1
10								1		1
11-15						1	1	1	1	2
16-20				2				1		3
21-25						1				1
26-30								1		1
31-35							1		1	
36-40										
41-45								1		1
46-46+								2 ^a		2
No re- sponse			3	3					3	3
Average	.86	2.88	1.05	3.52	1.86	5.5	4.39	23.39	1.79	7.48

^aOne company with total of 53; 1 company with total of 225.

prior to 1940; four had established the function between 1946 and 1954; and one in each of the years 1956, 1957, and 1958.

The average of all personnel in all three job categories in companies with staff was 7.48 (Table 5-8). This average drops to 5.19 if the one company with an unusually large number of total research personnel is eliminated from the calculation. The average number of personnel in all types of positions increased as company size categories increased.

Table 5-8. Average number of personnel in purchase research positions, by company size (1959 sales, million dollars)^a

Position	Under 100	100- 499	500- 999	1,000 & Over	All Cos.
Researcher	1.75	2.09	2.79	14.17	4.46
Research Supervisor	.25	.39	.64	4.06	1.10
Researcher plus Research Supervisor	2.00	2.50	3.43	18.23	5.56
Secretarial and Clerical	.86	1.05	1.86	4.39	1.79
Total, all positions	2.88	3.52	5.50	23.39	7.48

^aBecause of rounding of data, totals do not necessarily agree.

2. Researchers

The firms in the larger size categories employed a larger number of purchase researchers within the purchasing department. Relatively large numbers of researchers were found in only the three largest size categories, and predominately in the largest size category. None of the firms in the smallest size category (under \$100 million) employed over four researchers; only one company in each of the middle size categories (\$100-499 million and \$500-999 million) had over ten researchers; while five (28%) of those companies in the largest size category (over \$1 billion) had over ten researchers on their purchase research staff (Table 5-9). The percent of companies which employed more than one researcher increased as company size category increased. In the smallest size category, only 25% of the eight companies with staff had more than one researcher; 37% of the 59 companies with staff in the \$100-499 million category had more than one researcher; 36% of the 14 companies in the \$500-999 million category; and in the largest size category 56% of the 18 companies had more than one researcher.

3. Research Supervisors

The position of research supervisor existed to a much greater extent in the larger companies. Sixty-one percent of the largest companies had one or more research supervisors on

Table 5-9. Number of researchers, number of research supervisors, total researchers plus supervisors, by company size.

Number of Personnel	Number of Companies (1959 Sales, Million Dollars)														
	Under 100			100-499			500-999			1000 & Over			Total		
	Researchers	Supervisors	Total	Researchers	Supervisors	Total	Researchers	Supervisors	Total	Researchers	Supervisors	Total	Researchers	Supervisors	Total
0		6			36			7			7			56	
1	6	2	5	37	18	31	9	6	6	8	3	6	60	29	48
2			1	5	2	9	2		4	2	4	1	9	6	15
3				5		3	1	1	1			2	6	1	6
4	2		1	4		3			1	3		2	9		7
5			1	2		5					1		2	1	6
6				1		2					1	2	1	1	4
7				1											1
8															
9															
10				1			1						2		
11-15				1		2	1		1	2		1	4		4
16-20									1	1		1	1		2
21-25											1			1	
26-30											1			1	
31-35										1			1		
36-40												1			1
41-45												1			1
46 and over										1 ^a		1	1		1
No res.				3	3	3							3	3	3
AV.	1.75	0.25	2.00	2.09	0.39	2.50	2.79	0.64	3.43	14.17	4.06	18.23	4.46	1.10	5.56

^a167

their purchase research staff; 50% of companies in the \$500-999 million sales category had one or more research supervisors; 36% of companies in the \$100-499 million sales category; while only 25% of companies in the smallest sales category (under \$100 million) utilized the services of a research supervisor (Table 5-9). The presence of the position of research supervisor may be an indication that the staff purchase research function had assumed departmental status, however, there is no assurance that this is so, due to wide variation in meaning and use of position titles.

The larger companies employed the larger number of persons in the position of purchase research supervisor. None of the companies in the smallest size category employed more than one research supervisor; only two companies in the \$100-499 million sales category had more than one research supervisor (each had two supervisors); only one company in the \$500-999 million sales category had over one supervisor (this company employed three supervisors); while eight (44%) of those in the \$1 billion or over sales category employed two or more purchase research supervisors.

4. Researchers Plus Research Supervisors

Since in many companies the research supervisor may perform work of a similar nature to that done by the researcher, and may devote only a small part of his time to actual

supervision, these two job categories are considered together here for analysis of number of "professional" purchase research personnel. In 48 (50%) of the 96 companies with staff which furnished data on number of personnel, the staff consisted of only one "professional" purchase research person. Fifteen companies (16%) had two "professional" personnel, and only nine companies (9%) indicated ten or more "professional" personnel employed in purchasing research (Table 5-9). These data indicate that, at present, "professional" purchase research staffs tend to be fairly small in size.

5. Secretarial and Clerical

The number of secretarial and clerical personnel assigned to purchasing research increased as the size of the firm increased. Twenty-four of the firms in the two smaller size categories indicated no secretarial and clerical personnel assigned to purchase research. None of the firms in the two smaller size categories had over four secretarial and clerical personnel in purchasing research. Two of the 14 firms (14%) in the \$500-999 million sales category had four or more secretarial and clerical personnel in purchasing research, while seven (39%) of the 18 firms in the over \$1 billion sales category had four or more secretarial and clerical personnel in purchasing research. Two of these

firms had over ten such personnel in their purchase research staff (Table 5-7).

6. Research Staff as a Percent of Purchasing Staff

In approximately half (48%) of those companies with staff, the purchase research staff accounted for five percent or more of the total employees in the purchasing department, excluding secretarial and clerical personnel in the computation. In 28% of the companies with staff, the purchase research staff accounted for seven percent or more of the total employees in purchasing (excluding secretarial and clerical personnel in the computation). Table 5-10 presents the data on the percent of total purchasing staff made up of research personnel in the 82 companies with staff which reported the number of personnel in both the purchasing department and the staff purchase research function.

History, Organization, and Objectives of Staff Purchase Research In Selected Companies

This section presents information on the staff purchasing research function in selected companies. These companies were among the ten companies in which interviews were conducted during the summer of 1960. Case studies describing the history, organization, objectives, and status of staff purchasing research in eight large manufacturing firms are presented, to

Table 5-10. Total "professional" personnel (researchers and supervisors) as percent of total purchasing staff (exclusive of secretarial and clerical)

"Professional" Purchase Research Personnel as Percent of Total Purchase Staff	Number of Companies (1959 Sales, Million Dollars)					
	Under 100	100- 499	500- 999	1,000 and Over	Total	
					Number	Percent
Less than 0.5%		1		1	2	2%
.5 - .9%		3	1	2	6	7
1 - 1.9%	1	7	2	4	14	17
2 - 2.9%		5	2		7	9
3 - 3.9%		5			5	6
4 - 4.9%		8	1		9	11
5 - 5.9%	1	4	1	2	8	10
6 - 6.9%		5	1	2	8	10
7% and over	5	14	1	3	23	28
No figure ^a	1	7	4	5	17	

^aIn 17 companies the number of personnel within the purchasing department was not furnished.

provide illustrations of actual company practice and experience in utilization of a purchase research staff. Although much more extensive data were obtained regarding the purchase research function in each of these companies, care has been taken in presenting these data to respect the confidence of these companies and to preserve their anonymity. Certain portions of the data have been disguised, although no substantial misrepresentation of fact has been made. Since all the quoted statements in this section were obtained by interview, they may not be verbatim quotations.

1. Company A

Company A manufactured industrial products, primarily in the metal working field. Most of its products were mass produced, highly engineered items sold to other firms for incorporation into final products. Purchasing, which accounted for around 54% of the sales dollar, was handled on a decentralized basis, with each division maintaining its own purchasing staff. The Director of Purchases reported to the President of the corporation. Reporting to the Director were four managers: Manager, Purchase Research and Analysis Section; Manager, General Traffic; Manager, Steel and Raw Material Purchases; and Manager, Production Parts, Machinery, and Mill Supply Purchases.

The formally stated objective of the Purchase Research and Analysis Section was to: "Coordinate and participate in parts purchasing programs to effect economies through continuous review of: source selection, price analysis, design modification, material specifications, make or buy programs, new product costing and sourcing, and price negotiation." The Manager, Purchase Research and Analysis stated the main objective of his section was to put vendor negotiations on a realistic basis, saying:

Purchasing in this company is an analytical job in which the buyer "tears down" a particular item in terms of its cost elements to get a fair price. We do not believe in the old system of haggling with a vendor. We want our negotiations on a realistic basis. We want our buyers to know what costs are involved, which involves knowing types and quantities of raw materials and purchased items that go into a product, knowing what methods a vendor must use to produce a given product, knowing average hourly labor rates and time required to produce the product, and knowing the burden allocation, in order that he can arrive at a realistic price. For instance, one thing we get involved in is how much profit should be allowed a vendor when he incurs a five cent an hour labor increase? Should his burden amount also be increased? Our philosophy in purchasing research is that the people in the buying groups should be doing the same job that we are doing, as time permits. And we also encourage people in the buying groups to submit items to us for cost improvements. However, the buyer normally is not able, due to lack of knowledge or time, to conduct the studies necessary to put our buying on a realistic basis. We exist to fulfill a function that largely would not get done otherwise.

Reporting to the Manager, Purchase Research and Analysis were three full-time purchase analysts, plus a secretary.

At the time of interview, there were two vacant purchase analyst positions, due to a recently imposed corporate "hiring freeze."

An attempt was being made to use temporary positions within this section for training purposes. The Director of Purchases stated: "We deliberately try to give our new, young people training in purchasing research. We feel that this type of training is perhaps more important than buying training; therefore, we attempt to give them this purchasing research experience first." There were no other purchasing research positions within the company, although each division did have a cost reduction committee, including a purchasing representative, to value analyze products.

The position of Purchase Analyst was first established in 1952. Additional positions were not added until 1955, when the present Director of Purchases assumed his position. According to this Director, in describing the emphasis on and growth of purchasing research from 1955 to the present: "It was evident to me that a buyer, if he is doing an adequate job, has a full, eight-hour day in front of him, and that we could not expect the buyers to take the time to do depth analysis of purchasing problems. I felt that someone has to be able to sit back and take the 'ivory tower approach' to purchasing, look at what we are doing, and recommend changes

which will increase efficiency." The full-time position of Manager, Purchase Research and Analysis was established in 1959, to provide full departmental status and supervision of this activity.

Considerable resistance by plant purchasing personnel to purchase research was experienced in the initial stages of its growth, although it was now felt that purchase research had earned the respect and cooperation of plant purchasing personnel.

2. Company B

Company B was an industrial goods producer. Purchasing was handled on three levels within the corporation: (1) the corporate purchasing office determined and administered overall purchasing policy, and procured many large-dollar items directly, or negotiated national contracts; (2) four divisional purchasing agents, located in various parts of the country, procured those items for which they had been assigned procurement responsibility, within policy limits set forth by corporate headquarters; and (3) plant purchasing specialists released against contracts negotiated by the central office or by one of the divisional purchasing agents, and placed local orders (under \$200).

The Corporate Director of Purchases reported to the

President of the corporation. Reporting to him were a Manager, Purchase Research; four Division Purchasing Agents; four Purchasing Agents at the corporate offices; and a Manager of Administrative Services, who supervised all clerical and expediting work.

The formal purchasing research effort had as its objective to point out new areas of study in purchased materials or services, and to assist buyers in study of those areas where the possibility of more economical purchases were possible. In the words of the Research Manager, "Our main function is to define the problem, put a dollar sign on it, and to feed information to buying personnel so that they can do a more effective buying job." After establishment of the research function, purchase research also became heavily involved in the development of adequate material specifications, in operating a training program for buyers, and in serving as a "funnel" for communication between purchasing and other departments of the company.

The formal research effort was initiated in 1956 with the establishment of the Manager, Purchase Research. Recently an Assistant Manager, Purchase Research was added, making a total of two research persons, plus one secretary.

3. Company C

Company C was a producers goods manufacturer, in which operations were centralized in a fairly small geographic area. Purchases accounted for only about 30% of the sales dollar, primarily because of company-owned raw material sources. The Purchasing Division was headed by a Vice-President, Purchases; reporting to him were a staff Manager of Trade Relations and the Purchasing Agent for the major plant location. Reporting to this Purchasing Agent were a Staff Assistant, Purchasing Research; two Assistant Purchasing Agents, each in charge of a major commodity class; and an Assistant Purchasing Agent in charge of expediting. The present Purchasing Agent formerly held the position of Staff Assistant, Purchasing Research.

According to the Purchasing Agent, the staff research position was considered at some length before establishment, "for they felt that the profit potential in increased efficiency through purchasing was so great, but they moved slowly in order not to antagonize anyone." Before the position was finally established, visits were made to several other companies already using the staff approach. The formally stated objectives of purchasing research were: "Conduct research studies and prepare reports and special analyses to assist purchasing management in evaluating purchases and investigating raw materials, services, and sources of supply." The work

actually accomplished by Purchasing Research was largely a functional analysis of purchased materials, and an investigation of purchasing administrative procedures. Little in the way of economic analysis was done.

The position of Staff Assistant, Purchasing Research was established in 1955. When originally established it was given supervisory status, notwithstanding that it was a "one-man department." The Staff Assistant's comment indicated the reason: "My job requires the respect of people within the operating and other service departments. To accomplish this the purchase researcher must be located at a certain status level. For instance, my use of the executive dining room enables me to have frequent contact with operating managers and other supervisory personnel." In 1960 an individual was hired for the newly established position of Purchase Analyst, reporting to the Staff Assistant. One clerical position was assigned to this section; there were no other staff purchase research positions within the corporation.

4. Company D

Company D was a multi-divisional manufacturer of chemicals and related products. Each division maintained its own purchasing organization. In addition, at corporate headquarters there was a General Purchasing Department, headed by a Director

of Purchases. This department set policies and procedures under which the divisional and plant purchasing people operated and also negotiated contracts for all major raw materials used throughout the corporation. Reporting to the Director of Purchases were two individuals: The Manager, Purchasing Research; and the Assistant Director of Purchases. Reporting to the Assistant Director were six General Purchasing Agents; a Staff Assistant, Administration; and a Staff Assistant, Operations.

The Director of Purchases indicated that the full-time purchase research function was established because of his conviction that if a buyer was doing an adequate purchasing job, he did not have the necessary time to study, in detail, the long run picture of the commodities he was buying and the vendors he was, or could have been, dealing with. Primarily, purchasing research existed to supply purchasing people with decision-making information. According to the formally stated objective, purchasing research existed: "To carry out purchasing research studies of specific commodities, of market conditions and of industries to assist in the development and formation of purchasing policies, plans and programs, and to provide management with information or recommendations pertinent to purchasing factors to be considered in reaching their decisions." The activities of purchasing research had

in the past been almost exclusively in the economic and commodity analysis area. When originally set up, the purchasing research effort was to include one position devoted to the value analysis area, but this position was never filled, and such was not anticipated. Instead, the buying personnel performed this work as a part of their normal duties.

The purchase research function was formally organized in 1953, with the establishment of the position of Purchase Research Analyst. The purchasing research function had since been expanded, and now was headed by a Manager, Purchasing Research, who reported to the Director of Purchasing. Reporting to the Manager was one Staff Assistant-Commodity Studies, and one Statistical Analyst, who also did any necessary clerical work. Although not located in the Purchasing Research Section, the Staff Assistant-Operations, who reported to the Assistant Director of Purchasing, did work of a research nature on purchasing operations and procedures. He reviewed purchasing operations as carried out in the divisional and plant purchasing offices, to assure that the department was properly organized, that general office policies were being complied with, and that efficient purchasing procedures were being utilized.

Purchasing research positions were felt to be on a par with the top buying jobs within the company, both in terms of status

and salary. Relations with divisional and plant purchasing personnel were felt to be very satisfactory, although there was relatively little direct contact between Purchasing Research and divisional and plant purchasing people. One limitation noted by the Manager, Purchase Research was that it was extremely difficult in this company to communicate with other departments, except through formal organizational channels. It was felt that Market Research had considerably higher status than Purchase Research within this company, partially because Market Research was located, organizationally, at a higher level within the company.

5. Company E

Company E was a manufacturer of industrial machinery. Purchases accounted for slightly over 50% of the sales dollar. The purchasing organization at the corporate headquarters was headed by a Director of Purchases who reported to the Executive Vice President. The corporate purchasing office did not have any operative purchasing responsibility, but instead functioned as a policy-making and advisory office. Reporting to the Director of Purchases were an Assistant Director of Purchases, a Traffic Manager, and a Consumers Group Purchasing Agent. Also reporting to the Director, on a functional basis, was the Materials Manager, Industries Group. The Materials

Manager, who reported to the Manufacturing Manager, Industries Group, had responsibility for purchasing, scheduling, materials control, receiving and shipping, warehousing, in-plant transportation, and value analysis. This materials management organization for the Industries Group was adopted in 1960, and resulted in a transfer of purchasing for the Industries Group to the newly established Materials Manager, Industries Group. An Engineer in Charge, Value Analysis reported to the Materials Manager; he formerly reported to the Director of Purchases. There were no other full-time value analysis or purchasing research groups within the company.

Their formal statement concerning value analysis was as follows: "Value analysis is strictly a teamwork effort. It requires that we bring into play all of the talent and ideas from within and without the company and to focus all attention on the objective of obtaining equivalent or better quality and performance at lower cost. The enthusiastic cooperation of all participants must be obtained and that means understanding and intelligent human relations must be practiced in every phase of the program." According to the Director of Purchases, value analysis, as originally conceived, was to consider only purchased items, but their thinking now was that it should enter into the design stage, with development of prototypes, and also work with the estimating department in arriving at

cost estimates for production: "It has a definite part in manufacturing operations, investigating areas of make or buy, method of manufacture, and type of tooling. We also feel that it should be concerned with overall company systems and procedures and should not be limited solely to purchasing. We desire to develop the attitude that value analysis is the property of all departments within the company, and not merely that of Purchasing."

The company had relied heavily on outside consultants in setting up their value analysis effort. The Value Analysis Section was formed in late 1959, and as of August, 1960, their work had been primarily of a planning nature. A major part of the time of this section had been spent in setting up and administering "Value Analysis Seminars" put on to communicate the aims of value analysis to people within all departments of the company. Each Seminar was approximately a week in length, and the actual instruction was done by a consulting firm. The hope was expressed by the Engineer in Charge, Value Analysis that once the training needs had been satisfied, his section would become a purchasing research group, per se, doing studies on the purchase of particular materials or parts, on inventory control systems, and in the systems and procedures area.

Reporting to the Engineer in Charge, Value Analysis Section, were three persons: a Value Engineer, a Value Analyst, and one Secretary.

6. Company F

Company F was a manufacturer of producers goods. Purchasing was headed by a Vice-President, Purchases, located in the company's main offices. Reporting to the Vice-President, Purchases, was a Director of Purchases, who administered all purchases for one major end-product group. Additionally, reporting to the Vice-President was an Assistant to the Vice-President, who was responsible for coordinating purchasing policy between the Vice-President and other Directors of Purchases who were located in the other major end-product divisions of the company. Reporting to this Assistant to the Vice-President was the Manager of Purchasing Research.

The objectives of the corporate Purchasing Research Department were fourfold: (1) To explore foreseeable requirements for commodities, which would involve investigation of possible pool buying arrangements and proper timing of purchase commitments relative to price level changes; (2) To administer the program of cost reduction reporting, in order to recognize those who are creative in the purchasing function. (Purchasing Research became involved in cost reduction projects, but primarily it attempted to provide impetus to the

buying organization); (3) To assist buying personnel in making studies, in any area directed at doing a better buying job. It was felt that if the buyers were doing an adequate job, they do not have the time necessary to make exhaustive studies, particularly if such studies require crossing lines of organization to obtain necessary data; and (4) To keep the Vice-President, Purchases advised on any special situations, in order that the Vice-President could keep his superiors informed.

The Purchasing Research Department served not only the corporate purchasing office, but also served the personnel in the purchasing offices at the various company divisions, although a number of these divisions had their own full-time purchase research personnel. The Director of Purchases, at the central office, commented that he felt that management recognized their lack of knowledge in many areas necessary to enable optimum purchasing performance, and that they felt Purchasing Research was a coordinative staff function, looking into areas of potential improvement. The advantage of such a group was felt largely to be in initiating, stimulating, and coordinating research in various areas, with the bulk of the actual work being carried out by buying personnel. In the opinion of this Director of Purchases, the major disadvantage of the Purchasing Research activity, as set up and operated

in this company, was that it was a "catch-all," and occasionally became heavily involved in performance of certain related activities, to the detriment of its research efforts.

The Manager, Purchasing Research indicated his general philosophy was that Purchasing Research existed "to fill any vacuum within the purchasing area." He felt that anything that contributed to the accomplishment of this stated objective was a legitimate area for Purchasing Research to work in, and since the objectives of Purchasing Research had not been spelled out clearly, a definition of the specific interests of Purchasing Research had been a matter of verbal agreement between Purchasing Research and various corporate purchasing personnel and operative management.

The purchasing research function was formally recognized in 1953, with the establishment of a full-time purchasing research position. The staff purchasing research function had grown gradually since 1953, and now had departmental status, headed by the Manager, Purchasing Research. Reporting to him were seven persons: two Staff Assistants-Purchasing Research; two Purchasing Research Analysts; two Purchasing Research Clerks; and one secretary.

More than one individual in this company commented that the work of the Purchasing Research Department had not always been well received by some members of the buying organization,

many of whom sometimes thought of Purchasing Research as an "ivory tower approach." Considerable difficulty had been experienced, in some instances, in getting the cooperation required for a particular study. It was indicated that overcoming this resistance was sometimes a long and difficult process.

7. Company G

Company G was a multi-divisional manufacturer of chemicals and related products. Purchasing was decentralized under separate Directors of Purchases, located in each of the divisions. Each Director of Purchases reported to the appropriate Division Manager. Within the largest major product division, reporting to the Director of Purchases for that division were the Purchasing Analyst and an Assistant Director of Purchases. The Assistant Director of Purchases, in turn, had two Purchasing Managers reporting to him.

The formal purchasing research function had as its objective to provide support, either in terms of data or services, to the buying personnel, in order that sounder overall procurement decisions could be arrived at. This objective was accomplished through provision of the following five functions:

- (1) Service the scientific areas, both with chemical information and also with purchases of any materials, supplies, and

services required for research projects; (2) Develop technical assistance from vendors, which involve arranging seminars, talks or conferences between company purchasing personnel and vendor technical personnel; (3) Prepare market studies, considering supply, demand, price, and vendors of major, and new, purchased commodities; (4) Develop sources for new raw materials, where none were presently available; (5) Make any special studies on purchasing problems as assigned by the Director of Purchases.

The purchasing research function was formally recognized in 1953, with the establishment of the position of Raw Material Analyst, reporting to the Assistant Director of Purchases. In 1960 the Analyst was made responsible to the Director of Purchases. Two persons reported to the Raw Materials Analyst: an Assistant Raw Materials Analyst, established in 1960, to do work closely akin to that of the Raw Material Analyst; and a Purchasing Assistant, who handled primarily clerical duties.

8. Company H

Company H was a multi-divisional company manufacturing a wide group of producers goods. Purchasing was organized on a divisional basis, but with major policies and procedures established at the central office. Each division was organized

on a materials management basis, and made its own purchases, although certain major commodities were purchased and controlled by the central office. At company headquarters was located a Corporate Materials Manager, who reported to an Executive Vice-President. On the staff of the Corporate Materials Manager were several departments and staff specialists, which acted in an advisory capacity to the materials management organizations in the various divisions. Staff advisory departments, or staff specialists, were in existence for the areas of: Production Control; Value Analysis; Traffic; Materials Management; Defense Mobilization Planning; and Purchasing Research.

The objective of the purchasing research organization was to supply pertinent information and answers to problems faced by buying personnel, and to investigate and recommend courses of action aimed at improving overall purchasing efficiency. A quotation from one of the company's manuals on Purchasing Analysis follows:

Within the total field of "Purchasing Analysis," three special areas have been recognized as follows:

1. Value Analysis
2. Purchasing Practices and Training
3. Purchasing Research in the areas of Purchasing Economics and Reports.

The Purchasing Research function is one of providing analytical and statistical information and guidance to the operating departments and company management

concerning the current and long-term availability of materials and the price trends expected. This consists of three main phases as follows: (1) current economic and purchasing reports, (2) long-range material forecasts, and (3) special studies, which may be requested by the departments. The philosophy behind this service activity is a realization that the pressure of purchasing activity often does not permit the Purchasing Agent or Buyer to make a careful investigation of the materials situation, particularly long range forecasts. It was decided, therefore, that a service could properly be performed in this respect for the whole company.

The Purchasing Research Department was established in 1955, with the establishment of a Manager, Purchasing Research, reporting to the Corporate Materials Manager. At the time of interview there were twelve persons in Purchasing Research, plus secretarial and clerical personnel.

According to the Manager, Purchasing Research, the Commodity Analysts were considered at an equal status level with a top Materials Manager in an operating department. The others in the Purchasing Research Department were considered to be at a somewhat lower status level, and were in a period of training to prepare themselves for greater responsibility in the corporation's purchasing area.

Chapter Summary

Approximately one-third (32.6%) of the 304 large United States industrial firms which responded to the questionnaire employed one or more staff research personnel within their purchasing department. Ninety-nine companies had a purchase

research staff; 205 did not.

Contrary to common belief, staff purchasing research is not strictly a post-World War II development. Of the surveyed group, at least six firms established the staff purchase research function during 1930 or earlier. One firm indicated establishment of its purchase research function around the turn of the century. The companies in the larger size categories, in general, were the first to establish research staff. The Chemical; Transportation Equipment; and Electrical Machinery, Equipment, and Supplies industries appear to have been first in the trend to establish purchase research staff.

Substantial growth in establishment of the staff research function has occurred in the last ten years. Eighty-seven percent of those companies with staff established the staff research function during 1950 or later. 1960 was the one single year in which the largest percent of those with staff (22%) established the function. The number of companies newly establishing the function has approximately doubled each five years for the last fifteen years.

The utilization of purchase research staff increased as company size category increased. Sixty-two percent of companies with sales of \$1 billion or over had a purchase research staff (over 4.6 times the percent for companies in the smallest category). Utilization of purchase research staff also

increased with increased size of total purchasing staff.

The staff purchase research function was approximately twice as prevalent in companies in durable goods industries as in non-durables. Forty percent of the firms in durables manufacturing had staff; only 21% of firms in the non-durable goods manufacturing industries had staff.

The number of researchers, research supervisors, and secretarial personnel in purchase research increased with increased company size category. The average number of researchers in all companies with staff was 4.46; the average number of research supervisors was 1.10; the average number of secretarial and clerical personnel was 1.79. The average number of total personnel in purchase research was 7.48.

The last section of this chapter presents case studies of eight companies with a staff purchase research function, to illustrate actual company practice in organization and objectives of staff purchasing research.

CHAPTER VI

SUMMARY OF RESEARCH TOPICS AND

RESEARCH INVOLVEMENT

Introduction

This chapter is a summary of the findings regarding topics researched and persons who performed the research. Question three of the questionnaire (Appendix 1) asked the respondent to indicate on which of the 38 different topics research was done in 1959 or 1960, which topics produced most worth-while results, and by whom the topics were researched (staff purchasing research personnel, buying personnel, and purchasing administrators). A comparison is made in this chapter between companies with staff and those without staff in relation to total number of topics researched, the evaluation of research results, and the involvement of purchase research staff, buyers, and administrators in purchasing research. More detailed data for the three major research categories and for each of the 38 individual research topics are presented in Chapters VII, VIII, and IX.

The responses from the 99 companies with staff and the 205 companies without staff were adjusted to a basis of one hundred, in order that they could be compared. Additionally, statements made about research done, the evaluation of research

results, and the involvement of personnel in the research refer in all cases to an average of the companies in that group.

Topics Researched

Substantially more topics were researched by companies which had staff than by those without staff. Those companies with a research staff indicated research done on 62.6% of the total number of research topics listed, while those companies without staff indicated they had done research on only 35.8% of the total number of topics listed (Table 6-1). Thus, those companies with staff researched 1.75 times as many topics as were researched by companies without staff. The presence of the staff research function did appear to significantly affect the number of topics researched. From this, it can be concluded that a company with a purchase research staff would probably do research on 1.75 times as many topics as a company without staff.

The possible purchase research topics were divided into three categories on the questionnaire: Research on Purchased Materials, Products, or Services; Research on Vendors; and Research on the Purchasing System. In all three categories, those companies with staff researched a larger number of topics than was researched by companies without a purchase research staff.

Table 6-1. Research done and declared most worth-while, by major research categories

	Major Research Category				Total, All Categories
	Purchased Materials, Products, or Services	Vendors	The Purchasing System		
	Companies w/Staff w/oStaff	Companies w/Staff w/o Staff	Companies w/Staff w/oStaff	Companies w/Staff w/oStaff	
Topics researched	62% 38%	57% 31%	67% 36%	62.6% 35.8%	
Topics declared to have produced most worth-while results	15 8	7 4	11 7	11.8 6.4	
Topics which when researched were declared to have pro- duced most worth-while results	25 21	11 14	18 19	18.8 18.0	

In the Research on Purchased Materials, Products, or Services category, those with staff did research on 62% of the topics, while those companies without staff researched only 38% of the topics. Thus, companies with staff researched 1.6 times as many topics in the Purchased Materials, Products, or Services category.

The Research on Vendors category showed similar results, for those companies with staff indicated research done on 57% of the possible topics, while companies without staff indicated only 31% of these topics were researched during 1959 or 1960. Comparison of these percentages indicates that in the Research on Vendors category, companies with staff did research on 1.8 times as many topics as was done by companies without staff.

The Research on the Purchasing System category showed the largest difference between number of topics researched by those companies with purchase research staff and those without, for those companies with staff did research on almost twice (1.9 times) as many topics as was done by companies without staff. Those with staff indicated research done on 67% of the possible topics under this category, while those companies without staff researched only 36% of the possible topics.

Topics Produced Most Worth-while Results

A much larger number of research topics were declared as having produced most worth-while results by those companies which had a purchase research staff. Companies with a research staff indicated 1.8 times as many topics produced worth-while results as were indicated by companies without a research staff. Eleven and eight-tenths percent of the total number of topics were indicated by companies with staff as having produced most worth-while results; only 6.4% of the total topics were so indicated by companies without staff (Table 6-1). From this, it is possible to conclude that if a company has a purchase research staff, it would probably produce most worth-while results on 1.8 times as many research topics as it would if it did not have a staff.

In the general category of Research on Purchased Materials, Products, or Services, 15% of the topics were indicated by companies with staff as having produced most worth-while results, as opposed to only 8% by companies without staff, showing that those with staff regarded almost twice as many of these topics as having produced most worth-while results.

Seven percent of the topics in the Research on Vendors category were indicated by those with staff as having produced most worth-while results, and only 4% by those without staff. Thus, in this category, companies with staff indicated 1.8.

times as many topics as having produced most worth-while results.

Companies with staff indicated 11% of topics in the Research on the Purchasing System category as having produced most worth-while results. This percent was 1.7 times as large as the 7% of topics indicated by companies without staff as having produced most worth-while results.

The results from topics actually researched by companies which had purchase research staff were valued slightly higher than the results obtained by companies without staff. Those companies with staff indicated that 18.8% of the total topics which they researched produced most worth-while results; those without staff indicated 18% of the topics actually researched produced most worth-while results (Table 6-1).

Although the percentage of total topics actually researched which produced most worth-while results did not differ greatly between companies with and without staff, there was a considerable difference in evaluation of results on many of the individual research topics. The better-known research topics, such as Substitution, Standardization, and Packaging, were indicated as having produced most worth-while results when actually researched, by a higher percent of companies without staff. On the less well-known topics, such as Method of Production or Manufacture, Pricing Procedure and Structure,

Formulation of Price Index, and Learning Curve, a substantially higher percent of companies with staff indicated most worth-while results produced when these topics were actually researched. Specific instances of this are discussed in the next three chapters.

In the Research on Purchased Materials, Products, or Services category, those companies with staff indicated 1.2 times as many topics which they researched produced most worth-while results as was indicated by companies without staff. Twenty-five percent of those topics researched by companies which had staff were declared as having produced most worth-while results, while only 21% of those topics researched by companies which did not have staff were indicated as having produced most worth-while results.

In both the Research on Vendors, and Research on the Purchasing System categories, companies without staff indicated a slightly higher percent of topics researched as having produced most worth-while results than was indicated by those with staff (14% to 11%, and 19% to 18%, respectively).

Relation Between Company Size and Research Done

Company size appeared to have some influence on the number of topics on which research was done in those companies which had purchase research staff. Company size did not appear to

affect the number of topics researched in companies without staff (Table 6-2).

Table 6-2. Topics researched, by company size

Size (1959 Sales, Million Dollars)	Companies with Staff	Companies without Staff
Under \$100	59%	38%
100-499	63	35
500-999	59	40
1,000 and over	67	35

Relation between Industry
Classification and Research Done

Companies with staff researched more topics than companies without staff in 13 of the 14 industry classifications. The only exception was in the Textile Mill Product and Apparel Industry. In the following six industry classifications the percent of topics researched by companies which had staff was at least twice as large as the percent of topics researched by companies without staff: Food and Tobacco; Transportation Equipment; Electrical Machinery, Equipment, and Supplies; Paper; Crude Petroleum and Natural Gas; and Mining (Table 6-3).

Table 6-3. Topics researched, topics produced most worth-while results, by industrial classification

Industry Classification	Number Companies Reporting	Percent of Companies Researching Topic		Percent Indicating Most Worth-While Results					
				All Companies Reporting			Only Companies Which Researched This Topic		
		w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37		36	65	29	7	8	7
Transportation Equip.	17	20		42	60	26	7	11	3
Chemicals	13	20		51	71	38	11	13	10
Machinery except Elec.	14	16		50	61	39	10	10	9
Primary Metals	10	18		51	54	49	8	8	6
Electrical Machinery, Equip. & Supplies	9	15		47	70	33	8	10	7
Paper	3	13		26	46	21	6	13	4
Crude Petroleum and Natural Gas	7	8		42	62	25	10	16	5
Fabricated Metal Prod.	5	10		55	74	46	9	13	8
Stone, Clay and Glass	4	8		47	68	37	12	20	8
Textile Mill Product and Apparel	1	9		53	45	56	8	16	7
Ordnance; Leather; Prof., Scientific, Optical; Misc. Manufacturing	4	5		53	61	47	15	25	7
Mining	2	5		29	50	21	5	12	2
Petroleum Refining	0	6		38	--	38	4	--	4
Rubber and Plastics	0	6		13	--	13	2	--	2
Lumber and Wood Prod.	1	4		33	37	32	5	5	5
Printing and Publishing	0	5		36	--	36	8	--	8
AVERAGE				44.5%	62.6%	35.8%	8.2%	11.8%	6.4%
							18.4%	18.8%	18.0%

Relation Between Industry Classification and Research Results

In all industry groups in which some companies had staff,
the percent of companies with staff which indicated most
worth-while results produced was as high or higher than the
percent for companies without staff. In the following seven
industries the percent of companies with staff was two or
more times larger than the percent of companies without staff
which indicated most worth-while results produced on the total
topics: Transportation Equipment; Paper; Crude Petroleum and
Natural Gas; Stone, Clay and Glass; Textile Mill Product and
Apparel; Mining; and Ordnance; Leather; Professional, Scientific,
Optical; and Miscellaneous Manufacturing (Table 6-3).

For those interested in more detailed data by standard
industrial classification, Appendix 2 presents the percent of
companies which researched each topic, declared each topic
produced most worth-while results, and declared each topic
produced most worth-while results when actually researched.
These data are presented in this appendix also for the three
general categories of research topics and for all topics
combined.

Evaluation of Results of Research Performed by the Research Staff

The topics researched solely by staff purchasing research
personnel were evaluated as having produced most worth-while

results more frequently than those topics researched solely by the buyer or solely by the administrator. In those companies which had research staff, 29% of the total number of topics researched solely by this staff were declared to have produced most worth-while results, while in these same companies, only 17% of the total topics researched solely by the buyer, and 20% of the total topics researched solely by the administrator, were declared to have produced most worth-while results (Table 6-4). Thus, in total, the topics researched solely by the purchase research staff were declared as having produced most worth-while results 1.7 times more frequently than the topics researched solely by the buyer, and 1.45 times more frequently than the topics researched solely by the administrator.

From this it can be concluded that if a given company does research on a particular topic, the probability is that it would regard the results of the research more highly if the research were done solely by the research staff than if it were done solely by the buyer or administrator.

Involvement of Research Staff in Topics Researched

In those companies which had a research staff, that staff alone did the research on 23% of the total topics which were researched, and was involved in 45% of the topics researched.

In the companies with staff, the staff alone did the research on 5.4 topics, and was involved in 10.6 research topics (Table 6-4). Thus, the purchase research staff played a significant role in research done by companies with staff.

From this it is possible to conclude that in a company with a purchase research staff, that staff alone would probably do the research on approximately one-fourth of the topics researched, and would probably become involved in an additional one-fourth of topics researched, together with the buyer and/or the administrator. In total the staff would probably be involved in approximately half of the topics researched.

Administrator Involvement in Purchasing Research

The administrator was involved more heavily in that research done by companies without staff. The administrator alone was involved in research on 39% of the total topics which were researched by companies without staff, but in only 24% of the total topics researched by companies which had a research staff. The administrator working alone and with others was involved in 54% of those total topics researched by companies without staff, but in only 41% of the total topics on which companies with staff indicated they had done research (Table 6-4).

Although the administrator's involvement on those topics actually researched was less in companies with staff, he was

Table 6-4. Personnel involvement

	Purchase Research Staff	The Administrator		The Buyer	
		Co. w/ Staff	Co. w/o Staff	Co. w/ Staff	Co. w/o Staff
Percent of topics researched <u>solely</u> by per- sonnel in each category which produced most worth-while results	29%	20%		17%	
Percent of topics researched in which per- sonnel in each category did the research <u>alone</u>	23%	24%	39%	22%	46%
Percent of topics researched in which personnel in each category were involved in the research	45%	41%	54%	47%	63%
Average number of topics researched <u>solely</u> by personnel in each category	5.4	5.8	5.0	5.3	6.2
Average number of topics researched in which personnel in each category were involved	10.6	9.7	7.4	11.2	8.6

involved in a larger number of research topics. The administrator alone was involved in an average of 5.8 total research topics in companies with staff, but only 5 total topics in companies without staff. The administrator alone and with other personnel within the purchasing department was involved in research on 9.7 total topics in companies with staff, but in only 7.4 total topics in companies without a purchase research staff. The number of total topics on which the administrator alone and in combination with others was involved was 1.3 times greater in those companies with staff; however, those companies with staff performed research on 1.75 times as many topics.

From this it can be concluded that if a company has a research staff, the administrator would be involved in research on more topics than if the company did not have a staff. The increase in number of topics in which he would be involved, however, would not be as great as the increase in amount of research done, due to the assistance of the research staff.

Buyer Involvement in Purchasing Research

The buyer was involved in a larger percent of those topics actually researched in the companies which did not have a purchase research staff. The buyer alone did the research in 46% of the total topics researched by companies without staff, but

in only 22% of the total topics researched by companies with staff. The buyer alone and with other individuals within the purchasing department was involved in 63% of the total topics on which research was done by companies without staff, but in only 47% of the total topics researched by companies with staff (Table 6-4).

The average number of topics in which the buyer alone was involved was slightly greater in those companies without research staff, but the average number of topics on which the buyer alone and with others was involved was greater in those companies with staff. The buyer alone was involved in 6.2 topics in companies without staff, but only 5.3 topics in companies with staff. The buyer alone and with other individuals within the purchasing department was involved in 11.2 topics in companies with staff, but only 8.6 topics in companies without staff. Although the buyer alone and in combination with other individuals was involved in 1.3 times as many research topics in companies without staff, this increase was not as great as the 1.75 times increase in total number of topics researched by companies with staff compared to companies without staff.

Thus it can be concluded that in a company which has a purchase research staff, the buyer alone would probably be involved in a smaller number of topics than if the company

did not have a staff. But together with other individuals in the purchasing department he probably would be involved in a larger number of topics. This increase in topics in which the buyer would be involved when a research staff is present would not be as great as the increase in total number of topics researched when a staff is added. The staff does serve to relieve the buyer of certain research duties, permitting him to devote a greater amount of time to his actual purchasing responsibilities.

Chapters VII, VIII, and IX present, respectively, a detailed discussion of research topics in each of the following three major research categories: Research on Purchased Materials, Products, or Services; Research on Vendors; and Research on the Purchasing System.

CHAPTER VII

RESEARCH ON PURCHASED MATERIALS,
PRODUCTS, OR SERVICESIntroduction

The broad subject of purchasing research was divided into the following three major categories for purposes of analysis: Research on Purchased Materials, Products, or Services; Research on Vendors; and Research on the Purchasing System. Assignment of individual research topics to one of these three categories was somewhat arbitrary, for many of the research topics involve investigation which demands consideration of aspects relating to more than one of the general categories.

In this and the following two chapters, discussions of each of the three major research categories, and individual topics within each category, are based on two sources of information: specific company practices, gathered by interviews in ten companies with a research staff; and the responses to the questionnaires sent the chief purchasing executive in 491 of the 500 largest U.S. industrial firms. This chapter presents information on Purchased Materials, Products, or Services topics concerning research done; research which produced the most worth-while results; and the involvement of the purchase research staff, the administrator, and the buyer

in this research. Chapter VIII presents a similar analysis for Research on Vendors, and Chapter IX for Research on the Purchasing System. Chapter X, Related Activities and Data Sources, presents an analysis of some related activities in which purchase research staff was involved, and the data sources used in purchasing research. To provide detailed information on these topics, they are presented in these chapters in relation to both company size and industrial classification.

Individual research topics were not defined in the questionnaire, in order to keep the questionnaire as brief as possible. Various research topics might have been construed slightly differently by the responding executives; however, this problem of interpretation is not believed to have significantly affected the results.

Frequently, in the analysis of specific research topics in later sections of this and the following two chapters, an example of this general type research is given, based upon work done in one or more of the interviewed companies. Although companies responding by questionnaire and indicating research on a particular topic may not have made exactly the same type of study, the research can be presumed to be of this general nature.

No evaluation of the full depth, or amount, of research

conducted on any one topic in a given company surveyed by the questionnaire can be made, for the criteria for research were only that during 1959 or 1960, ". . . an individual spent a minimum total of one day's time on a topic, and, b. a written report was prepared." These criteria were used so that the respondents would be answering on a comparable basis, and to exclude study of a routine or casual nature.

The responses from the 99 companies with staff and the 205 companies without staff were both adjusted to a basis of 100, in order that the responses from the two groups could be compared. Additionally, statements made about the topics researched, the evaluation of results of the research, and the involvement of personnel in the research, in all cases refer to an average for the companies in that group.

Topics Researched

Those companies with a purchase research staff researched 1.6 times as many topics in the Purchased Materials, Products, or Services category as those companies without staff. On the average, companies with staff did research on 62% of the topics in this general category, while companies without staff researched only 38% of the topics in this general category (Table 7-1). Without exception, each of the 18 topics was researched by a greater percentage of companies with staff

Table 7-1. Companies researching purchased materials, products, or services topics; percent indicating most worth-while results

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results			
	Researching Topic		All Companies Reporting		Only Companies Which Researched This Topic	
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Commodity study	64%	80%	56%	21%	33%	15%
Correct order quantity	55	67	48	13	16	10
Demand forecast	38	51	32	5	9	2
Lease or buy	46	57	41	6	9	4
Make or buy	49	78	34	11	18	7
Method of production or manufacture	22	31	17	5	14	1
New product	42	57	35	6	6	5
Packaging	55	64	51	17	16	17
Price forecast	55	74	45	7	12	4
Pricing procedure or structure	34	49	27	5	10	2
Scrap disposal	55	68	48	9	12	7
Specification	46	64	38	11	15	8
Standardization	55	71	47	14	18	12
Substitution	51	64	45	13	14	12
Supply forecast	44	62	35	8	14	4
Tariff and import regulation	20	38	11	4	5	2
Transportation	39	54	32	7	9	6
Value analysis	57	76	47	25	41	17
AVERAGE	46%	62%	38%	10%	15%	8%
				22%	25%	21%

than without staff. The average occurrence factor¹ for all 18 topics in the Purchased Materials, Products, or Services category was 1.6. The occurrence factor for the following seven individual topics was greater than this average: Tariff and Import Regulation has the highest occurrence factor (3.5), followed by Make or Buy (2.3), Supply Forecast (1.8), Pricing Procedure or Structure (1.8), Method of Production or Manufacture (1.8), Specification (1.7), and Transportation (1.7). The research topic with the smallest occurrence factor is Packaging, but even on this topic the percent of companies with staff which did research on this topic was 1.3 times as large as the percent of companies without staff which did research on this topic.

From the occurrence factors indicated above, both for the Purchased Materials, Products, or Services category in total and for each individual research topic, and from the percentage of companies researching each topic (Table 7-1), the following conclusion is indicated: Companies with a purchase research staff are more likely to research topics in the Purchased Materials, Products, or Services category than companies without staff.

¹The occurrence factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which researched a topic.

Table 7-1 shows that considerable difference existed in percent of companies with and without staff which did research on each of the individual topics. The Commodity Study topic had the highest percent of companies, both with and without staff, which did research (80% and 56%, respectively). Method of Production or Manufacture was the topic on which the smallest percent of companies with staff indicated research done (31%), while Tariff and Import Regulation was the topic on which the smallest percent of those without staff indicated research done (11%).

The relative rank of percentages of companies with staff, and those without staff, which researched each topic shows considerable similarity. Large differences occurred on only two topics. Make or Buy was ranked second in order of percentage with staff which did research, twelfth in rank for companies without staff; Packaging ranked eighth in those with staff, but second in percentage rank for companies without staff which researched the topic. As previously pointed out, however, a higher percent of those companies with staff researched each of the eighteen topics than those companies without staff.

Topics Produced Most Worth-while Results

The percent of companies with staff which declared research on Purchased Materials, Products, or Services topics as having produced most worth-while results was almost twice as large as the percent of companies without staff which declared these topics as having produced most worth-while results. The average benefit factor,² computed from Table 7-1, is 1.9. With one exception, Packaging, a higher percentage of those with staff indicated research on each topic produced most worth-while results than was indicated by companies without staff. In the following ten topics the benefit factor was higher than the average benefit factor of 1.9, and in a few of these topics, considerably higher (figure in brackets is the benefit factor, computed from Table 7-1): Method of Production or Manufacture (14), Pricing Procedure or Structure (5), Demand Forecast (4.5), Supply Forecast (3.5), Price Forecast (3), Make or Buy (2.6), Tariff and Import Regulation (2.5), Value Analysis (2.4), Lease or Buy (2.3), and Commodity Study (2.2).

From the benefit factors above, and the percentages of companies indicating each topic as having produced most worth-while results (Table 7-1), this conclusion follows: Companies

²The benefit factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which indicated a topic produced most worth-while results.

with purchase research staff are more likely to find a larger number of research topics in the Purchased Materials, Products, or Services category producing most worth-while results than companies which do not have staff. This is due partially to the fact that companies with staff do research on more topics.

The average evaluation factor,³ computed from Table 7-1, shows that a larger percent of companies with staff regarded research done on these topics as having produced most worth-while results than was regarded by companies without staff. An average of 25% of topics actually researched in companies with staff were declared as having produced most worth-while results, compared to 21% of topics in companies without staff, producing an evaluation factor of 1.2. Not all individual topics had an evaluation factor greater than 1. Some of the more publicized topics, such as Packaging, Standardization, Substitution, and Transportation had an evaluation factor of less than 1. These evaluation factors are discussed later in this chapter, under the discussion of individual research topics, and are summarized in Table 7-22.

³The evaluation factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which declared most worth-while results produced when a topic was actually researched.

Relation Between Company Size and Research Done

Company size appeared to influence the number of topics on which research was done in those companies which had a purchase research staff. Company size did not appear to affect the number of topics researched in those companies without staff. Fifty-nine percent of the topics were researched by those companies with staff in the smallest size category (under \$100 million); this increased to 69% in companies with staff in the largest size category (over \$1,000 million), although the increase did not follow a steady progression through all four size categories. Table 7-2 shows that the research topics of Price Forecast, Pricing Procedure or Structure, Specification, Substitution, Supply Forecast, and Tariff and Import Regulation showed the greatest increase in percent of companies with staff researching as company size increased. These increases also did not necessarily follow a steady progression.

Relation Between Industry Classification and Research Done

The tendency for companies with a purchase research staff to research more topics than companies without staff held true in almost all industry groups. In all but two of the 17 industry groups, those companies with purchase research staff indicated research done on an average of 50% or more of the research

Table 7-2. Companies researching purchased materials, products, or services topics, by company size

		Company Size (1959 Sales, Million Dollars)							
		Under 100		100-499		500-999		1,000 and Over	
		w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Number of Respondents		8	52	59	121	14	21	18	11
<u>Research Topics</u>									
Commodity Study		88%	56%	80%	55%	80%	67%	83%	45%
Correct Order Quantity		63	48	75	49	50	43	61	55
Demand Forecast		38	33	47	31	71	33	56	36
Lease or Buy		75	48	54	37	57	43	61	55
Make or Buy		88	37	80	29	71	57	78	36
Method of Prod. or Mfg.		38	17	36	14	21	33	22	27
New Product		38	34	60	33	71	38	50	45
Packaging		75	52	61	50	50	57	83	36
Price Forecast		50	37	75	47	71	52	89	45
Pricing Procedure or Structure		25	25	50	26	29	29	72	36
Scrap Disposal		88	63	64	42	71	52	72	36
Specification		50	42	64	37	64	33	72	36
Standardization		75	58	71	41	71	52	72	55
Substitution		63	50	66	41	43	52	78	45
Supply Forecast		50	37	58	34	71	43	78	27
Tariff & Import Regulation		13	19	36	6	36	19	61	18
Transportation		63	38	50	29	43	33	72	27
Value Analysis		75	52	80	44	64	52	78	45
AVERAGE PERCENT		59%	41%	62%	36%	57%	44	69%	39%

topics, while in only three industry groups did companies without staff indicate an average of 50% or more of the topics researched (Table 7-3). There were only two industry groups (Textile Mill Product and Apparel; and Ordnance; Leather; Professional, Scientific, and Optical Equipment; and Miscellaneous Manufacturing) in which the average percent of topics researched was larger in companies without staff than in those companies with staff.

The average percent of Purchased Materials, Products, or Services topics researched was particularly large in those companies with staff in the following industries: Stone, Clay, and Glass Products (78%), Fabricated Metal Products (73%), Chemicals (73%), Food and Tobacco (67%), Electrical Machinery, Equipment, and Supplies (67%), and Machinery, except Electrical (62%). For those interested in a more detailed analysis by industry classification, Appendix 2 presents for each industry classification the following information: the percent of companies with and without staff which researched each topic, the percent which declared each topic produced most worth-while results, and the percent which declared most worth-while results produced when a topic was researched.

In the following sections, each individual research topic is discussed. Where possible, an example is given of research

Table 7-3. Companies researching purchased materials, products, or services, by standard industrial classification

Industry Group	Number of Companies		Percent Researching	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	9	37	67%	40%
Transportation Equipment	17	20	58	26
Chemicals	13	20	73	39
Machinery, except Electrical	14	16	62	41
Primary Metals	10	18	58	56
Electrical Machinery, Equipment, Supplies	9	15	67	34
Paper	3	13	56	20
Crude Petroleum	7	8	59	27
Fabricated Metal Products	5	10	73	49
Stone, Clay, Glass	4	8	78	41
Textile Mill Product & Apparel	1	9	33	61
Ordinance; Leather; Professional, Scientific, Optical; Misc. Mfg.	4	5	36	57
Mining	2	5	50	18
Petroleum Refining	0	6	--	42
Rubber and Plastics	0	6	--	13
Lumber and Wood	1	4	39	35
Printing and Publishing	0	5	--	39
AVERAGE			62%	38%

conducted on each of the topics by one of the ten companies with purchase research staff which were interviewed. Additionally, a table is presented to show, by industry classification, the percent of companies with and without staff which did research on the topic, declared the topic as having produced most worth-while results, and declared the topic as having produced most worth-while results when actually researched. The occurrence factor, benefit factor, and evaluation factor are computed from each of the tables. Following the discussion of individual research topics the occurrence, benefit, and evaluation factors are summarized for all eighteen topics (Table 7-22).

Commodity Study

Research on this topic would be directed at an examination of all pertinent aspects surrounding the purchase of a commodity (normally a basic, raw material), to the end that the individual actually buying that commodity would be in a better position to assess his current and future purchasing position. A Commodity Study would involve analysis of such things as the following: how the commodity is produced (different production methods); vendors capable of producing the commodity and their capacities; possible substitutes; a vendor's strategic position relative to other vendors and consumers;

the foreign situation as it affects supply, demand and/or price of the commodity; pertinent government regulations and controls; competing demands for the commodity; forecasts of future usage of the commodity; basis on which prices of the commodity are established; price history and explanations of significant changes. All factors affecting the commodity would be examined, as a basis for making forecasts of future supply, demand, and price of the commodity.

An example of Commodity Study research was furnished by one large chemical producer in which the Purchase Research Department made commodity studies on the major raw materials purchased in order to: provide the buyer information on which to make sound procurement decisions; provide purchasing management and top management a sound picture of supply-demand relationships in major raw materials; furnish information and projections useful in making expansion decisions (plant location often depended on the long-run purchased materials outlook); and provide a basis for training newly assigned buying individuals.

Transportation was a major cost factor in the purchase price of many commodities used by this company; thus plant location was largely determined by the supply of purchased materials. Expansion plans were based on relative prices of different, substitutable raw materials, and once a plant

was constructed with the capability of consuming a particular purchased raw material, it could be adapted to other raw materials only at considerable cost. Purchasing needed to be able to provide long-term forecasts of raw material supply and price in order that intelligent expansion and production decisions could be made.

One particular commodity study in this company took approximately one man-month to prepare, and the report of findings was in five sections: (1) The Supply Outlook which included figures on supply by differing processes; total U. S. supply potential; and import potential by countries; (2) The Demand Outlook, including demand history and projected future requirements; (3) The Geographical Distribution of Supply and Demand, giving data for different regions of the country; (4) The Price Outlook, including the historical pattern; future outlook; the transportation situation, showing costs of competing transport methods; domestic market prices; prices for use in this industry; prices for use in other industries; (5) The Summary Section, which stated recommendations for future action. The assumptions on which various parts of the report were based were explicitly stated; many sections presented the differing assumptions which might be used, and the differing conclusions which would result. Areas in which the data were inadequate were pointed out, with

action recommended to provide more reliable and useful data.

Table 7-4 presents information on surveyed companies researching the Commodity Study topic, by industry classification. Computation from this table shows that, in total, the occurrence factor is 1.4. The benefit factor (companies in each group that indicated this research topic as producing most worth-while results) is 2.2. Thus, a much greater number, relative to the totals in each group, of companies with staff found this research topic produced most worth-while results for their companies than was found in companies without staff. An evaluation of the usefulness of this research, made by only the companies researching this topic, indicates an evaluation factor 1.6.

Thus the percentage of companies with staff doing research on this topic was 1.4 times as large as the percentage without staff that researched this topic. Companies with staff indicated most worth-while results from this research 2.2 times as often as those without staff. When research was done on Commodity Study, by companies in both groups, those with staff evaluated the research as producing most worth-while results 1.6 times more frequently than those without staff.

In all but one industry (Primary Metals) a higher percentage of companies with staff researched this topic than

Table 7-4. Commodity Study

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
							All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	67%	100%	59%	26%	56%	19%	39%	56%	32%	32%
Transportation Equip.	17	20	49	59	40	8	6	10	17	10	25	25
Chemicals	13	20	82	100	70	39	54	30	48	54	43	43
Machinery, except Electrical	14	16	70	79	63	23	21	25	33	27	40	40
Primary Metals	10	18	75	70	78	7	10	6	10	14	7	7
Electrical Machinery, Equip. and Supplies	9	15	54	78	40	13	22	7	23	29	16	16
Paper	3	13	56	67	54	31	66	23	56	100	43	43
Crude Petroleum and Natural Gas	7	8	47	86	13	20	43	0	43	50	0	0
Fabricated Metal Prod. Stone, Clay and Glass	5	10	53	80	40	13	40	0	25	50	0	0
4	8	97	100	88	0	25	75	0	27	75	0	0
Textile Mill Product and Apparel	1	9	70	100	67	30	0	33	43	0	50	50
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	89	100	80	44	75	20	50	75	25	25
Mining	2	5	57	100	40	14	50	0	20	50	0	0
Petroleum Refining	0	6	50	--	50	0	--	0	0	--	0	0
Rubber and Plastics	0	6	33	--	33	17	--	17	50	--	50	50
Lumber and Wood Prod.	1	4	20	0	25	20	0	25	100	0	100	100
Printing and Publishing	0	5	60	--	60	0	--	0	0	--	0	0
AVERAGE			64	80	56	21	33	15	32	41	26	26

companies without staff. In all industries but one (Lumber and Wood) at least 59% of companies with staff researched this topic. In several industries, 100% of those with staff researched this area.

Correct Order Quantity

Studies in this research area involve attempts to establish the size of each purchase order for a particular commodity which will minimize the combined cost of placing the purchase orders and the cost of maintaining amounts of the item in inventory. To arrive at the correct order quantity for a particular item, or class of items, requires establishment of the approximate costs involved in placing orders, and the costs incurred in maintenance of inventory.

An example of a Correct Order Quantity project was furnished by one of the interviewed companies which had been buying bagged salt used to thaw roads around the plant in bad weather. Frequent purchases were made of small quantities of this salt. The Purchase Analyst was investigating the possibilities of buying in carload quantities, in bulk, only a few times each winter, which would result in a better price, and less administrative cost in purchasing. However, in order to do this, closed storage facilities, which were at a premium, would be required to prevent the salt from collecting

moisture and freezing. These additional storage costs had to be balanced with concomitant savings, to arrive at an optimum purchase quantity decision.

Computation from Table 7-5 shows that the occurrence factor for Correct Order Quantity research is 1.4. An average of 67% of companies with staff did research on this topic; in three industries 100% of those with staff researched this topic. The benefit factor is 1.6, indicating a much larger percent of companies with staff found this topic one that produced most worth-while results. A comparison of the evaluation of results (percent of those researching which indicated most worth-while results produced) shows an evaluation factor of 1.1. This indicates that when this topic was researched, it was evaluated slightly higher in terms of results produced in those companies with staff than in companies without staff.

Demand Forecast

This type of research consists of study to establish future demand for a particular item. The requirements might be internal company demands, based on varying production assumptions, and/or external demand from other companies and/or industries. Information on demand would be useful in determining material availability, and price, and as a basis

Table 7-5. Correct Order Quantity

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/ Staff	Total	w/ Staff	w/ Staff	Total	w/o Staff
Food and Tobacco	9	37	59%	67%	57%	17%	22%	16%	30%	33%
Transportation Equip.	17	20	49	71	30	11	24	0	22	33
Chemicals	13	20	48	54	45	9	8	10	19	14
Machinery, except Electrical	14	16	63	79	50	10	7	13	25	9
Primary Metals	10	18	82	80	83	18	10	22	22	13
Electrical Machinery, Equip. and Supplies	9	15	46	67	33	8	0	13	18	0
Paper	3	13	19	33	15	6	33	0	33	100
Crude Petroleum and Natural Gas	7	8	33	57	13	13	29	0	40	50
Fabricated Metal Prod.	5	10	80	100	70	20	0	30	25	0
Sone, Clay and Glass	4	8	58	75	50	25	50	13	43	67
Textile Mill Product and Apparel	1	9	80	100	78	20	100	11	25	100
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	33	25	40	0	0	0	0	0
Mining	2	5	57	100	40	14	50	0	25	50
Petroleum Refining	0	6	67	--	67	0	--	0	0	--
Rubber and Plastics	0	6	17	--	17	0	--	0	0	--
Lumber and Wood Prod.	1	4	40	0	50	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	20	--	20	33	--
AVERAGE			55	67	48	13	16	10	23	24
										22

for planning purchasing strategy. A demand forecast would probably be a part of any comprehensive commodity study.

A Demand Forecast research project was done on steel in one of the interviewed companies. First, trend projections for steel demand were made, taking into account the historical growth pattern within the industry, modified by the influence of competing substitutes for steel. Second, cyclical fluctuations in the economy, as they affect steel demand, were roughly forecast. Finally, the relative importance, position, and use of consuming industries over the next twenty years were forecast. This steel demand forecast was a part of a larger commodity study on steel.

Computation from Table 7-6 produces an occurrence factor of 1.6, showing that the average percent of companies with staff which did Demand Forecast research was 1.6 times greater than in those without staff. Fifty-one percent of those companies with staff did research on this topic. In two industries, Paper and Stone, Clay, and Glass Products, 100% of the companies with staff researched this area.

The benefit factor is 4.5, showing that the percentage of those companies with staff finding most worth-while results from this area was significantly greater than in those without staff. The evaluation factor is 2.1, showing that of those companies researching this topic, over twice as many with

Table 7-6. Demand Forecast

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting		Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	39%	56%	35%	4%	11%	3%	11%	20%
Transportation Equip.	17	20	30	35	25	3	6	0	9	16
Chemicals	13	20	52	62	45	13	8	10	17	13
Machinery, except Electrical	14	16	37	43	31	0	0	0	0	0
Primary Metals	10	18	61	70	56	11	20	6	18	29
Electrical Machinery, Equip. and Supplies	9	15	25	33	20	4	0	7	17	0
Paper	3	13	19	100	0	6	33	0	33	33
Crude Petroleum and Natural Gas	7	8	47	71	25	7	14	0	14	20
Fabricated Metal Prod.	5	10	47	60	40	0	0	0	0	0
Stone, Clay and Glass	4	8	50	100	25	8	25	0	17	25
Textile Mill Product and Apparel	1	9	50	0	56	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	33	25	40	11	25	0	33	100
Mining	2	5	14	0	20	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	--
Rubber and Plastics	0	6	17	--	17	0	--	0	0	--
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0
Printing and Publishing	0	5	20	--	20	0	--	0	0	--
AVERAGE			38	51	32	5	9	2	12	17
									8	

staff found results most worth-while as was found by companies without staff doing research on the topic. Compared to other areas, the percent which declared this topic produced most worth-while results was fairly low.

Lease or Buy

Frequently, in certain capital equipment items, the alternative of leasing, or renting, an item from a supplier presents itself. Depending on the costs involved, a leasing arrangement may be more advantageous in the long run than an outright purchase. The decision is basically an economic one, but it involves the assignment of dollar values to certain benefits and inconveniences which are hard to evaluate. For instance, with a lease arrangement, the lessor bears the largest risk of technological advancement outmoding the equipment; the lessee is absolved of the risk of having obsolete equipment. The dollar evaluation of the benefits from transferring the risk of obsolescence is extremely difficult. This research involves analysis of advantages and disadvantages of leasing versus buying, assignment of values, and the balancing of costs against dollar benefits. Office machines and equipment frequently are the subject of lease or buy studies.

An example of a project in this area in one of the companies interviewed involved passenger car transportation requirements. The corporation in question had been leasing

all its passenger car requirements. A thorough study was conducted of costs under the present leasing system, and a proposed system in which all cars would be purchased by the central office and then leased internally to the various operating divisions. The proposed system of purchase with internal leasing to divisions was found to have the following advantages: (1) a central cost control point for all vehicle costs; (2) better vehicular control from a maintenance and safety standpoint; and (3) the purchase and sale of vehicles could be handled within the central office, allowing some specialization in the purchase of this equipment. Analysis by the Purchase Analyst of costs under the two systems indicated an approximate saving of \$10.50 per month per vehicle over the previously used standard leasing arrangement.

Table 7-7 shows that an average of 57% of companies with staff did research on Lease or Buy, while only 41% of companies without staff researched this topic. The occurrence factor, computed from Table 7-7, is 1.4. In three industries, Textile Mill Product and Apparel, Primary Metals, and Crude Petroleum and Natural Gas, however, a larger percent of companies without staff indicated research on this topic than was indicated by companies with staff.

The benefit factor is 2.3, showing that over twice as many companies with staff found this research topic produced most

Table 7-7. Lease or Buy

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting		Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	48%	56%	46%	2%	0%	2%	5%	0%
Transportation Equip.	17	20	30	41	20	0	0	0	0	0
Chemicals	13	20	42	69	25	0	0	0	0	0
Machinery, except Electrical	14	16	50	64	38	14	21	7	27	33
Primary Metals	10	18	57	50	61	4	10	0	7	20
Electrical Machinery, Equip. and Supplies	9	15	42	56	33	4	11	0	10	20
Paper	3	13	38	67	31	13	67	0	33	100
Crude Petroleum and Natural Gas	7	8	53	43	63	7	0	13	13	0
Fabricated Metal Prod.	5	10	73	100	60	13	20	10	18	20
Stone, Clay and Glass	4	8	42	75	25	25	25	25	60	33
Textile Mill Product and Apparel	1	9	70	0	78	9	0	11	14	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	75	60	11	0	20	17	0
Mining	2	5	0	0	0	0	0	0	0	0
Petroleum Refining	0	6	50	--	50	0	--	0	0	--
Rubber and Plastics	0	6	17	--	17	0	--	0	0	--
Lumber and Wood Prod.	1	4	80	100	75	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	40	--	20	67	--
AVERAGE			46	57	41	6	9	4	13	16
										12

worth-while results. As noted earlier, part of this may be explained by the fact that those with staff did more research in this area. The evaluation factor is 1.3, indicating that when this topic was researched, that research done in companies with staff was found to produce worth-while results more frequently than research done by companies without staff.

Make or Buy

Studies in this area involve similar considerations as in Lease or Buy research. Again, the purchaser has two procurement alternatives: to manufacture the item in his own facility, or to use the services of a vendor. Ideally, the decision in this matter is made on the basis of economic considerations, although the calculation of costs of the two alternatives may be extremely difficult, because of the problem of valuation of certain intangibles (for example, valuation of the efforts of a vendor in improving the item in question, as opposed to product improvement efforts which would be made if the item were manufactured within the purchaser's plant).

One project of this nature concerned a study made of a subassembly for a large manufactured unit which formerly had been purchased complete from a vendor, but on which a decision recently had been made to discontinue the services of this vendor and bring the item into the plant for manufacture.

Purchase Research analyzed each of the components required to be manufactured for incorporation into this subassembly.

Included among the components was a machined steel shaft 14 inches in length and 1 inch in diameter. Manufacture of this shaft in the vendor's plant would cost \$9.68 each, including the normal burden rate, or an out-of-pocket cost of \$6.36 each. On investigation by the Purchase Analyst, a specialty supplier was located which would produce this shaft to the company's specifications at \$2.84 each, with no tooling charge. On an approximate annual usage of 5,000 shafts, at a cost reduction of approximately \$3.50, this would result in an approximate \$17,600 saving. The recommendation was to buy rather than to make this shaft.

Computation from Table 7-8 shows an occurrence factor of 2.3. Seventy-eight percent of companies with staff did research on Make or Buy, while only 34% of those without staff researched this topic. Research on this topic was predominant in the metal working industries, both in companies with, and without, staff. In the Chemical Industry, also, this research was predominant, where 100% of companies with staff researched this topic.

The benefit factor is 2.6, showing that a much larger percent of companies with staff judged research on this topic produced most worth-while results. However, the evaluation

Table 7-8. Make or Buy

Industry Classification	Number Companies			Percent of Companies			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	28%	67%	19%	2%	2%	0%	2%	8%	0%	14%
Transportation Equip.	17	20	59	88	35	24	41	41	10	41	47	29
Chemicals	13	20	52	100	20	9	23	0	0	17	23	0
Machinery, except Electrical	14	16	77	93	63	13	7	19	19	17	8	30
Primary Metals	10	18	61	70	56	4	0	6	6	6	0	10
Electrical Machinery, Equip. and Supplies	9	15	67	100	47	21	22	21	0	31	22	43
Paper	3	13	19	33	15	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	7	14	0	0	0	0	0	0	0	0
Fabricated Metal Prod.	5	10	73	100	60	7	20	0	0	9	20	0
Stone, Clay and Glass	4	8	42	75	25	17	25	13	13	40	33	50
Textile Mill Product and Apparel	1	9	40	0	44	10	0	11	11	25	0	25
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	78	75	80	22	50	0	0	29	67	0
Mining	2	5	14	50	0	0	0	0	0	0	0	0
Petroleum Refining	0	6	17	--	17	0	--	0	0	0	--	0
Rubber and Plastics	0	6	33	--	33	0	--	0	0	0	--	0
Lumber and Wood Prod.	1	4	60	100	50	40	100	25	25	67	100	50
Printing and Publishing	0	5	40	--	40	40	--	40	40	100	--	100
AVERAGE			49	78	34	11	18	7	22	22	23	21

factor is only 1.1, indicating that when research was done on Make or Buy, only a slightly higher percent of companies with staff produced most worth-while results.

Method of Production or Manufacture

These studies might involve examination of a purchased commodity or part, for the purpose of suggesting changes in the vendor's manufacturing processes which would result in a savings in production cost, and thus a better ultimate purchase price for the commodity or part. Studies of this nature also might involve examination of production techniques or processes used in the buyer's company, to discover and suggest possible process or equipment changes which would increase efficiency and reduce production costs.

In one of the interviewed companies in the Chemical Industry, studies were done on specific manufacturing processes used in the buyer's company, in an effort to evolve more efficient production processes. The particular processes studied were normally selected by two means: (1) competitor intelligence data which indicated the process used, or being considered, by one of their competitors, or (2) a review of profit margins on products, to indicate products with an unsatisfactory profit margin. The analysis, done by the Purchase Analyst, involved developing a flow chart on the

specific process, the materials used, and the yields obtained. Possible variations in process were investigated, normally with the assistance of personnel from the research laboratories. Such studies as these were time consuming and costly; however, the results in this company had in the past justified purchase research of this nature.

Computation from Table 7-9 shows an occurrence factor of 1.8 for research on the Method of Production or Manufacture topic. The percent of companies with staff, and without staff, which did research on this topic was fairly small. In all but two industries, Machinery, except Electrical, and Textile Mill Product and Apparel, a higher percentage of companies with staff researched this area than those without staff.

The benefit factor is 14, showing that 14 times as many companies with staff reported this area producing most worthwhile results as did companies without staff. The evaluation factor is 7.5, showing that when research was done on Method of Production or Manufacture, that done by companies with staff was evaluated considerably higher.

New Product

Research in this area involves analysis of new materials, products, or equipment; evaluation of potential usefulness to the organization; and placement of this knowledge before the

Table 7-9. Method of Production or Manufacture

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	24%	67%	14%	4%	11%	3%	18%	16%
Transportation Equip.	17	20	32	53	15	5	12	0	17	22
Chemicals	13	20	27	54	10	6	16	0	22	29
Machinery, except Electrical	14	16	33	29	38	3	7	0	10	25
Primary Metals	10	18	25	30	22	4	10	0	14	33
Electrical Machinery, Equip. and Supplies	9	15	33	44	27	13	22	7	38	50
Paper	3	13	25	67	15	6	34	0	25	50
Crude Petroleum and Natural Gas	7	8	27	43	13	0	0	0	0	0
Fabricated Metal Prod.	5	10	33	60	20	0	0	0	0	0
Stone, Clay and Glass	4	8	25	50	13	10	50	0	40	100
Textile Mill Product and Apparel	1	9	20	0	22	0	0	0	0	0
Ordinance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	75	60	22	50	0	33	67
Mining	2	5	14	50	0	0	0	0	0	0
Petroleum Refining	0	6	0	--	0	0	--	0	0	--
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0
Printing and Publishing	0	5	20	--	20	0	--	0	0	--
AVERAGE			22	31	17	5	14	1	24	45

appropriate purchasing, engineering and production personnel. Work in this area also might involve interesting suppliers in producing a new product, for which adequate supply sources are not presently available.

In one company interviewed, a new chemical material was required in order to begin production of a new product. The Purchase Analyst made a literature search, and determined this chemical to be available only in small ("research") quantities. The Analyst then contacted all suppliers who had the experience necessary to produce this product, narrowed this list down to the most promising one, and negotiated with this producer for "pilot plant" quantities. Based on the experience of this vendor in producing the first run, a decision was made as to the economic feasibility of producing larger quantities of this chemical. Results of this research were then turned over to the production department, and to the appropriate buyer for future action.

Computation from Table 7-10 indicates an occurrence factor of 1.6 for research on New Product. Only in two industries did a larger percent of companies without staff indicate research on this topic than companies with staff. The benefit factor is 1.2, indicating that a larger percent of those with staff have produced most worth-while results from this topic. The evaluation factor is only .7, showing that when research

Table 7-10. New Product

Industry Classification	Number Companies Reporting				Percent of Companies Researching Topic				Percent Indicating Most Worth-while Results			
	All Companies				Only Companies Which Researched This Topic							
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total
Food and Tobacco	9	37	46%	67%	41%	2%	0%	3%	5%	0%	7%	7%
Transportation Equip.	17	20	30	47	15	3	0	5	9	0	33	33
Chemicals	13	20	58	85	40	9	8	10	16	9	25	25
Machinery, except Electrical	14	16	50	64	38	7	7	6	13	11	16	16
Primary Metals	10	18	46	60	39	11	10	11	23	16	29	29
Electrical Machinery, Equip. and Supplies	9	15	33	56	20	0	0	0	0	0	0	0
Paper	3	13	25	33	23	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	27	29	25	0	0	0	0	0	0	0
Fabricated Metal Prod.	5	10	53	40	60	13	20	10	25	50	17	17
Stone, Clay and Glass	4	8	50	75	38	34	50	25	67	67	67	67
Textile Mill Product and Apparel	1	9	50	100	44	0	0	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	50	80	11	25	0	17	50	0	0
Mining	2	5	14	50	0	0	0	0	0	0	0	0
Petroleum Refining	0	6	17	--	17	0	--	0	0	--	0	0
Rubber and Plastics	0	6	17	--	17	0	--	0	0	--	0	0
Lumber and Wood Prod.	1	4	60	0	75	0	0	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	20	--	20	50	--	50	50
AVERAGE			42	57	35	6	6	5	13	11	15	15

was done on this topic, companies without staff regarded it as producing most worth-while results more frequently than did companies with staff which researched the area. Since this research topic is one in which the buyer should have great competence, this result should not be surprising.

Packaging

This area involves study of the packaging requirements of purchased products, and of finished products, with a view to effecting economies in the specification and purchase of these items. Such research involves a study of the function performed by this packaging, different methods which can be used to provide protection and facilitate handling of the product, plus the relative costs of the available packaging solutions.

In one company the Purchase Analyst researched the area of corrugated containers used by the company, providing information useful to the buyer on how to determine minimum packaging needs in corrugated; how to calculate a "reasonable" cost of production of various types, weights, and designs of corrugated; how to standardize corrugated requirements; and how to determine suitable corrugated sources. Since several buyers, physically located in different plants, were involved in corrugated purchases, this information had been of wide value to the corporation.

Table 7-11 shows that a large percent both of companies with and without staff did research on Packaging (64% and 51% respectively). The occurrence factor is 1.3, indicating that the percentage of those without staff indicating research in this area was lower than the percent for those with staff. The benefit factor is .9, showing that a larger percent of those without staff found the research producing most worthwhile results. The evaluation factor also is less than 1 (.7), showing that when research was done on Packaging, a higher percent of companies without staff found this research producing most worth-while results. This area is one in which much specialized help may be available, either from the vendor or from specialized company personnel.

Price Forecast

Research in this area, as in the areas of Demand Forecast and Supply Forecast, might be part of the total research in the area of Commodity Study. The purpose of this research would be to consider all possible elements affecting price, in order to arrive at an estimate of future price movement, which would be useful in planning future purchasing and production action.

An example of a Price Forecast study on a primary metal was furnished by one of the interviewed companies. Data were

Table 7-11. Packaging

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results			
					All Companies Reporting		Only Companies Which Researched This Topic	
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	78%	100%	73%	30%	44%	27%
Transportation Equip.	17	20	38	53	25	3	6	0
Chemicals	13	20	61	77	50	18	8	25
Machinery, except Electrical	14	16	43	50	38	13	22	6
Primary Metals	10	18	68	50	78	18	0	28
Electrical Machinery, Equip. and Supplies	9	15	50	56	47	4	0	7
Paper	3	13	13	0	40	0	0	0
Crude Petroleum and Natural Gas	7	8	67	71	63	27	14	38
Fabricated Metal Prod.	5	10	53	60	50	27	20	30
Stone, Clay and Glass	4	8	83	100	75	33	50	25
Textile Mill Product and Apparel	1	9	80	0	89	20	0	22
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg. Mining	4	5	67	100	40	22	50	0
Petroleum Refining	2	5	14	50	0	14	50	0
Rubber and Plastics	0	6	67	--	67	34	--	34
Lumber and Wood Prod.	0	6	17	--	17	0	--	0
Printing and Publishing	1	4	40	100	25	20	0	100
	0	5	40	--	40	0	--	0
AVERAGE			55	64	51	17	16	17
						30	25	34

gathered, analyzed, and presented on several elements of price for the commodity. One section of the report analyzed the price structure within the industry, considering such things as the basis upon which prices were set; the effects of labor, material, and overhead costs on price; and the influence of certain companies in the establishment of prices. A second section plotted the trend of prices over the past twenty years, indicating reasons for significant price changes. A third section analyzed the cost elements entering into the production of the commodity, giving projections of prices for raw materials and labor costs. Based on these data, a forecast of the price for this commodity for the next 20 years was made.

Table 7-12 presents data on research done on the Price Forecast topic. A large percentage of companies in both groups indicated research on this topic (74% of companies with staff, 45% of companies without staff, on the average). All industries indicated this type research was performed. The occurrence factor (computed from Table 7-12), is 1.7, showing that a much larger percent of those with staff researched this area. The benefit factor is 3, showing that the percent of companies with staff which declared this topic as producing most worth-while results was three times larger than that for those without staff. The evaluation factor

Table 7-12. Price Forecast

Industry Classification	Number Companies			Percent of Companies			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total
Food and Tobacco	9	37	59%	78%	54%	9%	11%	8%	15%	14%	15%	15%
Transportation Equip.	17	20	41	65	20	0	0	0	0	0	0	0
Chemicals	13	20	64	92	45	24	31	20	38	33	44	44
Machinery, except Electrical	14	16	60	71	50	0	0	0	0	0	0	0
Primary Metals	10	18	61	60	61	4	15	0	6	16	0	0
Electrical Machinery, Equip. and Supplies	9	15	54	67	47	4	0	7	8	0	14	14
Paper	3	13	28	100	15	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	47	71	25	14	28	0	29	40	0	0
Fabricated Metal Prod.	5	10	67	80	60	7	0	10	10	0	17	17
Stone, Clay and Glass	4	8	58	100	38	8	25	0	13	25	0	0
Textile Mill Product and Apparel	1	9	80	100	78	0	0	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg	4	5	78	100	60	23	50	0	29	50	0	0
Mining	2	5	29	50	20	0	0	0	0	0	0	0
Petroleum Refining	0	6	50	--	50	0	--	0	0	--	0	0
Rubber and Plastics	0	6	33	--	33	0	--	0	0	--	0	0
Lumber and Wood Prod.	1	4	20	0	25	0	0	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	0	--	0	0	--	0	0
AVERAGE			55	74	45	7	12	4	13	16	10	10

is 1.6, showing that of those actually doing this research, a larger percentage of companies with staff found it producing most worth-while results.

Pricing Procedure and Structure

This research would consist of study of the techniques used by particular vendors in establishing selling prices for particular commodities; the interrelationships between companies and industries which would affect the prices established; and the effect of outside forces in determining particular prices.

A study of this nature in one company interviewed resulted in the development of a celluloid "calculator" for a particular finished product. Through use of this calculator, plus data on certain aspects of a particular vendor's operation, a decision as to the vendor's approximate "reasonable" selling price could be determined.

Computation from Table 7-13 on Pricing Procedure and Structure shows an occurrence factor of 1.8, with 49% of those companies with research staff indicating research done on this topic and only 27% of those without staff. In only six industries did over half those companies with staff research this topic. The benefit factor is 5, showing that those companies with staff indicated this research producing most worth-while

Table 7-13. Pricing Procedure and Structure

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	33%	67%	24%	2%	11%	0%	7%	16%
Transportation Equip.	17	20	41	71	15	11	23	0	27	33
Chemicals	13	20	30	46	20	3	8	0	10	17
Machinery, except Electrical	14	16	30	21	38	3	0	6	11	0
Primary Metals	10	18	43	40	44	4	0	6	9	0
Electrical Machinery, Equip. and Supplies	9	15	46	78	27	4	11	0	9	14
Paper	3	13	25	67	15	6	0	8	25	0
Crude Petroleum and Natural Gas	7	8	33	57	13	13	14	13	40	25
Fabricated Metal Prod.	5	10	40	60	30	0	0	0	0	0
Stone, Clay and Glass	4	8	25	25	25	8	25	0	33	100
Textile Mill Product and Apparel	1	9	50	0	56	10	0	12	20	0
Ordinance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	44	25	60	11	25	0	25	100
Mining	2	5	14	0	20	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	--
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--
Lumber and Wood Prod.	1	4	40	0	50	0	0	0	0	0
Printing and Publishing	0	5	0	--	0	0	--	0	0	--
AVERAGE			34	49	27	5	10	2	14	20
									9	

results five times as frequently as those companies without staff. The evaluation factor is 2.2, indicating that when researched, results were regarded higher by companies with staff.

Scrap Disposal

Involved under this topic would be all types of study directed at increasing efficiency in the handling of scrap and surplus, and investigation of possible means by which the return from scrap and/or surplus sales might be increased. Since the scrap disposal function often is a responsibility of the purchasing department, and since large potential returns are involved, this area of research often is very fruitful.

One of the interviewed company's manufacturing operations involved making several shapes of continuous stampings out of long strips of steel. Since many of these stampings were of intricate design, the resultant scrap was of an elaborate design. This scrap formerly was sold to a scrap merchant in the community at the standard per pound price for that grade of scrap. As a result of study by the Purchase Analyst, this scrap is sold at a 3 1/2¢ higher price per pound to another manufacturer, who paints it, and modifies it slightly for use as ornamental dividers and for decorative purposes on the outside of buildings.

Table 7-14 shows that the percent of companies researching the Scrap Disposal topic was quite high; the average was 68% in companies with staff and 48% in those without staff. In four industries, 100% of companies with staff researched this area. The occurrence factor (computed from Table 7-14) is 1.4, showing that those with staff researched Scrap Disposal more frequently than those without. The benefit factor is 1.7, showing that companies with staff more frequently declared this area produced most worth-while results. The evaluation factor is only 1.1, showing that when Scrap Disposal was researched, a slightly higher percent of companies with staff rated it as producing most worth-while results.

Specification

Research in this area involves examination and analysis of materials specifications in order to assure that such specifications are satisfactory to all departments concerned, and to assure that they are not unduly restrictive, either in terms of specifying qualities not actually necessary or in limiting the number of vendors able to comply with the specifications.

In one company interviewed, Purchasing Research was responsible for preparation of all specifications for raw materials, and reviewed such specifications at frequent intervals to

Table 7-14. Scrap Disposal

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	35%	22%	38%	5%	5%	0%	5%	13%	0%	14%
Transportation Equip.	17	20	49	53	45	11	11	12	10	22	22	22
Chemicals	13	20	61	77	50	3	3	0	5	5	0	10
Machinery, except Electrical	14	16	63	79	50	10	10	7	13	16	9	25
Primary Metals	10	18	82	90	78	7	7	0	11	9	0	14
Electrical Machinery, Equip. and Supplies	9	15	63	100	40	8	8	0	13	13	0	33
Paper	3	13	38	67	31	13	13	67	0	33	100	0
Crude Petroleum and Natural Gas	7	8	67	71	63	20	20	28	13	30	40	20
Fabricated Metal Prod.	5	10	73	80	70	26	26	20	30	36	25	43
Stone, Clay and Glass	4	8	50	50	50	9	9	25	0	17	50	0
Textile Mill Product and Apparel	1	9	80	100	78	10	10	100	0	13	100	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	33	25	40	11	11	25	0	33	100	0
Mining	2	5	71	100	60	14	14	50	0	20	50	0
Petroleum Refining	0	6	50	--	50	15	15	--	0	0	--	0
Rubber and Plastics	0	6	0	--	0	0	0	--	0	0	--	0
Lumber and Wood Prod.	1	4	40	100	25	0	0	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	20	20	--	20	50	--	50
AVERAGE			55	68	48	9	9	12	7	17	18	16

assure they were current. In actuality, the specifications normally were written by the buyer, but Purchasing Research acted as liaison between the buyer, the operating department concerned, and the research and development department, to assure that the specifications, as written, were reasonable.

Table 7-15 presents data on research on Specification, by industry classification. The percent of companies with staff doing research on this topic was quite large, 64%. The occurrence factor (computed from Table 7-15) of 1.7 shows that a larger percent of companies with staff researched this topic than those without staff. The benefit factor is 1.9, indicating that a much larger percent of those companies with staff found this topic producing most worth-while results. The evaluation factor is 1, showing that of those actually doing research on Specification, companies without staff indicated this research as producing most worth-while results as frequently as those with staff.

Standardization

Projects of this nature involve analysis of purchased materials and products for the purpose of determining whether a standard product might be utilized in place of a special order item; whether the specifications of a particular item could be slightly modified, thus permitting the elimination

Table 7-15. Specification

Industry Classification	Number Companies		Percent of Companies		Percent Indicating Most Worth-while Results					
	Reporting		Researching		All Companies			Only Companies Which		
	Topic		Topic		Reporting			Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	61%	89%	54%	15%	34%	11%	25%	38%
Transportation Equip.	17	20	35	53	20	3	6	0	8	11
Chemicals	13	20	48	54	45	12	0	20	25	0
Machinery, except Electrical	14	16	47	64	31	10	21	0	21	33
Primary Metals	10	18	64	80	56	21	30	17	33	38
Electrical Machinery.										
Equip. and Supplies	9	15	50	89	27	9	11	7	17	12
Paper	3	13	38	67	31	6	0	8	17	0
Crude Petroleum and Natural Gas	7	8	33	57	13	13	29	0	40	50
Fabricated Metal Prod.	5	10	40	60	30	7	20	0	17	33
Stone, Clay and Glass	4	8	67	100	50	17	25	13	25	25
Textile Mill Product and Apparel	1	9	50	0	56	20	0	22	40	0
Ordnance; Leather; Prof., Scientific,										
Optical; Misc. Mfg.	4	5	33	25	40	11	0	20	33	0
Mining	2	5	29	50	20	0	0	0	0	0
Petroleum Refining	0	6	50	--	50	0	--	0	0	--
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--
Lumber and Wood Prod.	1	4	20	0	25	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	0	--	0	0	--
AVERAGE			46	64	38	11	15	8	23	23

of inventory of many different, but nearly identical items; or whether the procurement of a standard item in place of a special-order, more costly, item is possible. The advantages of successful research in this area are the more favorable price at which some standardized items can be purchased, the larger number of vendors available for a standard product, the simplification of inventory control procedures, and the smaller dollar value of inventory required.

An example of Standardization research was furnished by one of the companies interviewed in which the Technical Research Department within the company requisitioned clear slide glass discs for use in the laboratory. Upon review of this item by Purchase Research it was found that the relatively high price being paid for these items was due to the fact that they were a special order item, requiring special manufacturing procedures in the vendor's plant. Investigation indicated that a standard, catalog item, of only slightly different dimensions, could be purchased at a price of only \$.02; compared with the \$1.50 price of the special item.

Analysis of Table 7-16 shows that the percent of companies both with and without staff doing research on Standardization was quite large: an average of 71% and 47%, respectively. In the majority of industries over 50% of companies both with and without staff indicated research done on this topic. The

Table 7-16. Standardization

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	61%	78%	57%	13%	13%	11%	14%	21%	14%	24%
Transportation Equip.	17	20	57	77	40	14	14	18	10	24	23	25
Chemicals	13	20	55	77	40	6	6	8	5	11	10	13
Machinery, except Electrical	14	16	63	79	50	10	10	14	7	16	18	13
Primary Metals	10	18	75	70	78	25	25	30	23	33	43	29
Electrical Machinery, Equip. and Supplies	9	15	46	67	33	14	14	11	20	36	16	60
Paper	3	13	25	67	15	6	6	0	8	25	0	50
Crude Petroleum and Natural Gas	7	8	53	71	38	27	27	43	13	50	60	33
Fabricated Metal Prod.	5	10	60	60	60	20	20	20	20	33	33	33
Stone, Clay and Glass	4	8	58	75	50	17	17	25	13	29	33	25
Textile Mill Product and Apparel	1	9	60	0	67	10	10	0	11	17	0	17
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	50	70	22	22	25	20	33	50	25
Mining	2	5	29	50	20	0	0	0	0	0	0	0
Petroleum Refining	0	6	50	--	50	34	34	--	34	67	--	67
Rubber and Plastics	0	6	0	--	0	0	0	--	0	0	--	0
Lumber and Wood Prod.	1	4	60	100	50	40	40	100	25	67	100	50
Printing and Publishing	0	5	40	--	40	0	0	--	0	0	--	0
AVERAGE			55	71	47	14	14	18	12	26	25	27

occurrence factor (computed from Table 7-16) is 1.5, showing that companies with staff predominated in the research. The benefit factor also is 1.5, showing that companies with staff more frequently declared Standardization research as producing most worth-while results. The evaluation factor, however, is .9, indicating that when research was done on Standardization, a greater percentage of companies without staff found it producing most worth-while results.

Substitution

Research in this area is directed at finding other materials or items which could replace materials or items presently being used, with resultant lowered ultimate production costs. Frequently, a lowered quality grade may be substituted for the quality now used, with resultant savings.

In one company interviewed a small motor used in one assembly was attached to the unit by a bolted, aluminum cast base. This base cost 78¢ per unit, but it was felt that lightweight material should be used where possible, due to transportation costs. Purchasing Research investigated the possibility of using a steel stamping or an iron casting for the base. They found their saving on a steel stamping (cost: 20¢ per unit) more than enough to compensate for any additional transportation costs. On an annual usage of 5,000 units there

was a savings of \$3,000, minus a \$2,000 first year tooling cost. There also was a labor saving, since the new base was welded onto the motor, rather than bolted. In addition, four bolts per unit no longer were needed.

Table 7-17 shows the percent of companies which researched the Substitution topic. The percentage of both companies with and without staff which did research on Substitution was large: an average of 64% and 45%, respectively. The occurrence factor (computed from Table 7-17) is 1.4, indicating that 1.4 times as many companies with staff did research as those companies without staff. The benefit factor is 1.1, showing there was little difference in percent of companies with, and those without, staff which indicated this research produced most worth-while results. When research was done on Substitution, companies without staff regarded it higher as producing most worth-while results than those companies with staff, as the evaluation factor of .8 shows.

Supply Forecast

This type of material research, as with the research topics of Demand Forecast and Price Forecast, frequently will be a part of an overall commodity study. The purpose of this research is to isolate the factors which determine the quantity of the particular material available to the market; determine

Table 7-17. Substitution

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	46%	67%	41%	6%	6%	11%	5%	14%	16%	13%
Transportation Equip.	17	20	43	59	30	8	8	12	5	19	20	16
Chemicals	13	20	67	85	55	18	18	0	30	27	0	55
Machinery, except Electrical	14	16	53	64	44	3	3	7	0	6	11	0
Primary Metals	10	18	61	60	61	7	7	10	5	12	16	9
Electrical Machinery, Equip. and Supplies	9	15	46	56	40	8	8	22	0	18	40	0
Paper	3	13	19	0	23	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	40	71	13	13	13	14	13	33	20	100
Fabricated Metal Prod.	5	10	73	80	70	13	13	40	0	18	50	0
Stone, Clay and Glass	4	8	75	100	63	42	42	50	38	56	50	60
Textile Mill Product and Apparel	1	9	70	0	78	10	10	0	11	14	0	14
Ordinance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	75	60	22	22	50	0	33	67	0
Mining	2	5	29	50	20	0	0	0	0	0	0	0
Petroleum Refining	0	6	67	--	67	17	17	--	17	25	--	25
Rubber and Plastics	0	6	33	--	33	0	0	--	0	0	--	0
Lumber and Wood Prod.	1	4	20	0	25	0	0	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	20	20	--	20	50	--	50
AVERAGE			51	64	45	13	13	14	12	26	22	28

the sources of future supply of the material; and forecast the total, available supply of the material for some future time period. Frequently, investigation into the supply situation will provide advance warning of a material shortage. The results of this research also will affect decisions on expansion and location of production facilities.

An example of a Supply Forecast project in one of the interviewed companies was a study prepared by the Purchase Research Department on a major purchased commodity. The Analyst first analyzed the raw materials used in the production of the item, and the future availability of these raw materials. Next he investigated the current productive capacity of the several producers of this item, and related this to past growth of producers, and announced expansion and modernization plans of the various potential vendors. The uses of the current supply of the material by industry also were determined. The foreign production capacity for this item was established, and pertinent data on amounts of foreign production available for export, import and export regulations, and the transportation situation for foreign purchases also were assembled. Based on these data, forecasts of supply for several years into the future were made.

Table 7-18 presents data on companies researching the Supply Forecast topic. The average percentage of companies

Table 7-18. Supply Forecast

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	48%	89%	38%	11%	11%	22%	8%	23%	25%	21%
Transportation Equip.	17	20	27	41	15	3	3	0	5	10	0	33
Chemicals	13	20	58	85	40	21	21	38	10	37	45	25
Machinery, except Electrical	14	16	53	64	44	4	4	0	6	7	0	14
Primary Metals	10	18	50	40	56	0	0	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15	38	56	27	0	0	0	0	0	0	0
Paper	3	13	28	67	23	11	11	34	8	40	50	33
Crude Petroleum and Natural Gas	7	8	40	57	25	7	7	14	0	17	25	0
Fabricated Metal Prod.	5	10	47	80	30	0	0	0	0	0	0	0
Stone, Clay and Glass	4	8	42	100	13	8	8	25	0	20	25	0
Textile Mill Product and Apparel	1	9	80	100	78	0	0	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	56	50	60	22	22	25	20	40	50	33
Mining	2	5	29	50	20	0	0	0	0	0	0	0
Petroleum Refining	0	6	50	--	50	0	0	--	0	0	--	0
Rubber and Plastics	0	6	0	--	0	0	0	--	0	0	--	0
Lumber and Wood Prod.	1	4	20	0	25	0	0	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	20	20	--	20	50	--	50
AVERAGE			44	62	35	8	8	14	4	17	23	13

with staff which researched this topic was 62%; without staff, 35%. The occurrence factor (computed from Table 7-18) is 1.8 showing that companies with staff did more research on the Supply Forecast topic. The benefit factor is 3.5, showing that a much larger percentage of companies with staff found the research produced most worth-while results. The evaluation factor is also large (1.7), showing that when the Supply Forecast topic was researched, the results produced were valued more highly, on the average, in companies with purchase research staff.

Tariff and Import Regulation

Since foreign purchases, or the possibility of such purchases, each year grow increasingly more important in the decisions of many purchasing executives, it is natural that increasing time would be spent in study of applicable tariff and import regulations. Knowledge of such laws and regulations often may make the difference between sound and unsound purchasing decisions. Purchase research personnel might investigate tariff and import regulations for particular purchase items, in order that advisability of foreign procurement might be more comprehensively evaluated.

An example of research on this topic in one of the companies interviewed was a project done on the supply of a

particular commodity from the Far East. The objectives of the study, of which the tariff portion was only a part, were to establish whether or not foreign competition enjoyed a more favorable raw material position in the production of the final product, and if so, what could be done about it. The questions to be answered were: Would it be possible for this company to buy the raw material abroad, or buy a semi-finished product? How would applicable tariff regulations affect possibilities for foreign purchases? Thus, in making this study, intensive examination of applicable tariff regulations was made, as they would apply to importing the raw material.

Table 7-19 shows that the percent of companies researching Tariff and Import Regulation was small. Thirty-eight percent of those companies with staff researched this topic and only 11% of companies without staff. In a number of industries no research was done on this topic. Crude Petroleum; Electrical Machinery, Equipment and Supplies; and Fabricated Metal Products were the industries most active on this research topic. The occurrence factor (computed from Table 7-19) of 3.5 shows that a much greater percentage of companies with staff researched Tariff and Import Regulation. The percent of companies which indicated this topic produced most worth-while results was small. The benefit factor is 2.5, showing that those companies

Table 7-19. Tariff and Import Regulation

Industry Classification	Number Companies		Percent of Companies		Percent Indicating Most Worth-while Results									
	Reporting		Researching Topic		All Companies Reporting					Only Companies Which Researched This Topic				
	w/ Staff	w/o Staff	Topic	w/ Staff	w/o Staff	Topic	w/ Staff	w/o Staff	Topic	w/ Staff	w/o Staff	Topic	w/ Staff	w/o Staff
Food and Tobacco	9	37												
Transportation Equip.	17	20		22%	41	5	0	0	0	0	0	0	0	0
Chemicals	13	20		46	20	20	0	0	0	0	0	0	0	0
Machinery, except Electrical	14	16		21	6	0	0	0	0	0	0	0	0	0
Primary Metals	10	18		20	22	0	0	0	0	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15		42	78	20	8	11	7	20	14	33		
Paper	3	13		0	0	0	0	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8		47	71	25	0	0	0	0	0	0	0	0
Fabricated Metal Prod.	5	10		40	60	30	0	0	0	0	0	0	0	0
Stone, Clay and Glass	4	8		17	25	13	0	0	0	0	0	0	0	0
Textile Mill Product and Apparel	1	9		10	0	11	0	0	0	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5		33	50	20	11	25	0	33	50	0	0	0
Mining	2	5		0	0	0	0	0	0	0	0	0	0	0
Petroleum Refining	0	6		17	--	17	0	--	0	0	--	0	0	0
Rubber and Plastics	0	6		0	--	0	0	--	0	0	--	0	0	0
Lumber and Wood Prod.	1	4		0	0	0	0	0	0	0	0	0	0	0
Printing and Publishing	0	5		0	--	0	0	--	0	0	--	0	0	0
AVERAGE			20	38	11	4	5	2	18	13	26			

with staff indicated this topic produced most worth-while results more frequently than those without staff. The evaluation factor is only .5, showing that of those few companies researching, the percent of companies without staff which researched this topic and declared it producing most worth-while results was higher than that for companies with staff which did this research.

Transportation

Since transportation cost often represents a very large part of total purchase cost, many companies conduct research projects directed at discovering changes in transportation methods which would minimize the transportation element of the total purchase bill. Such research would involve such things as collection of data on competing transport rates, freight classifications, and differing transportation services available.

One of the companies interviewed investigated the possibility of operating a freight consolidation dock in a major city in which a number of company suppliers were located. This involved gathering data on transportation rates, and number and size of shipments. It was recommended by Purchase Research that the company employ a consolidator (thus taking advantage of special A & D [Assembly and Distribution] rates)

in that city to consolidate as many as possible of the LTL shipments originating in that area, and to ship, by common carrier, in truck-load lots to the company's major plant. Besides the more favorable rates, due both to the A & D rates and the truckload rates, they were able also to reduce the number of trucks coming into their receiving department by approximately 40 per day, and at the same time to get better service. The average saving since the inception of this consolidation arrangement had been \$3,000 per month.

Table 7-20 shows the percent of companies which did research on Transportation. The occurrence factor (computed from Table 7-20) is 1.7, showing the predominance of these companies with staff in this research. In only two industries was the percent of companies without staff which researched this area higher than the percent of companies with staff. The benefit factor is 1.5, showing that the percent of companies with staff which declared this area as having produced most worth-while results was considerably larger than the percent in companies without staff. The evaluation factor is only .9, indicating that the percent of those companies without staff researching which indicated most worth-while results produced was somewhat greater than in companies with staff.

Table 7-20. Transportation

Industry Classification	Number Companies Reporting				Percent of Companies Researching Topic				Percent Indicating Most Worth-while Results							
	Reporting				Researching Topic				All Companies Reporting				Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/o Staff
Food and Tobacco	9	37	28%	33%	27%	6%	0%	8%	23%	0%	30%	23%	0%	30%	23%	30%
Transportation Equip.	17	20	43	53	35	11	17	5	25	33	14	25	33	14	25	14
Chemicals	13	20	48	69	35	12	15	10	25	22	29	25	22	29	25	29
Machinery, except Electrical	14	16	40	64	19	7	7	6	17	11	33	17	11	33	17	33
Primary Metals	10	18	28	40	22	7	0	11	25	0	50	25	0	50	25	50
Electrical Machinery, Equip. and Supplies	9	15	50	67	40	4	11	0	8	16	0	8	16	0	8	0
Paper	3	13	25	67	15	0	0	0	0	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	40	43	38	0	0	0	0	0	0	0	0	0	0	0
Fabricated Metal Prod.	5	10	53	60	50	7	20	0	13	33	0	13	33	0	13	0
Stone, Clay and Glass	4	8	42	75	25	17	25	13	40	33	50	40	33	50	40	50
Textile Mill Product and Apparel	1	9	60	0	67	10	0	11	17	0	17	17	0	17	17	17
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	33	0	60	11	0	20	33	0	33	33	0	33	33	33
Mining	2	5	43	100	20	0	0	0	0	0	0	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	--	0	0	--	0	0	0
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--	0	0	--	0	0	0
Lumber and Wood Prod.	1	4	60	100	50	20	0	25	33	0	50	33	0	50	33	50
Printing and Publishing	0	5	40	--	40	0	--	0	0	--	0	0	--	0	0	0
AVERAGE			39	54	32	7	9	6	19	17	20	19	17	20	19	20

Value Analysis

The term "Value Analysis" is variously defined, but generally has two differing meanings: First, many define Value Analysis as the study of a function, and the comparison of the purchase price paid with the function performed by the item purchased, relative to other items that might be purchased which would satisfy the same function, but perhaps at a much lower cost. Under this definition, a number of research topics, for example, Substitution, Standardization, and Transportation, would be included in the work of Value Analysis. Second, many would define Value Analysis as a concentrated attack on any area with which purchasing is concerned, in an effort to improve purchasing efficiency. Thus, under this definition, almost any topic of purchasing research would be included, whether it be Commodity Study, Substitution, Analysis of Vendor Production Facilities, or Purchasing Procedures. Regardless of the definition used for Value Analysis, if a firm is doing Value Analysis it also would be researching one or more of the specific research topics listed above, and perhaps many of those discussed in the succeeding two chapters.

Both the General Electric Corporation and the National Association of Purchasing Agents have been instrumental in promoting Value Analysis concepts. The very high percentage

of companies indicating Value Analysis as one of the areas in which research efforts were directed attests to the success achieved in promoting the Value Analysis idea.

Table 7-21 presents data on the Value Analysis research topic. The percentage of companies both with and without staff indicating research on this topic was quite high (76% and 47%, respectively); the occurrence factor (computed from Table 7-21) is 1.6, showing that 1.6 times as many companies with staff researched this area as those without staff. The benefit factor is 2.4, showing the greater frequency with which companies with staff indicated this topic produced most worth-while results. The evaluation factor of 1.4 indicates that when research was done on Value Analysis, a higher percent of companies with staff regarded it as having produced most worth-while results than companies without staff.

Comparison of Occurrence,
Benefit, Evaluation Factors

Table 7-22 presents the occurrence factor, the benefit factor, and the evaluation factor for each of the Purchased Materials, Products, or Services research topics. The occurrence factors in this table indicate that in all research topics the average percentage of companies with staff was greater than the percent of companies without staff which researched each topic. The occurrence factor is highest in

Table 7-21. Value Analysis

Industry Classification	Number Companies Reporting	Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results						
					All Companies Reporting			Only Companies Which Researched This Topic			
		w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	
Food and Tobacco	9	37	50%	78%	43%	15%	23%	13%	30%	29%	31%
Transportation Equip.	17	20	57	82	35	30	52	10	52	64	29
Chemicals	13	20	61	77	50	24	39	15	40	50	30
Machinery, except Electrical	14	16	70	93	50	40	58	25	57	62	50
Primary Metals	10	18	61	60	61	25	20	27	41	33	45
Electrical Machinery, Equip. and Supplies	9	15	50	56	47	21	34	14	42	60	29
Paper	3	13	44	67	38	13	34	8	29	50	20
Crude Petroleum and Natural Gas	7	8	47	71	25	33	43	25	71	60	100
Fabricated Metal Prod.	5	10	73	100	60	26	40	20	36	40	33
Stone, Clay and Glass	4	8	83	100	75	42	75	25	50	75	33
Textile Mill Product and Apparel	1	9	50	0	56	30	0	34	60	0	60
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	75	60	45	50	40	67	67	67
Mining	2	5	29	50	20	15	50	0	50	100	0
Petroleum Refining	0	6	50	--	50	17	--	17	33	--	33
Rubber and Plastics	0	6	17	--	17	17	--	17	100	--	100
Lumber and Wood Prod.	1	4	60	100	50	0	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	20	--	20	33	--	33
AVERAGE			57	76	47	25	41	17	45	54	38

Tariff and Import Regulation where the percent of companies with staff was 3.5 times as great as the percent of companies without staff which did research. The benefit factor shows that, with the exception of Packaging, a higher percentage of those companies with staff declared all research topics as having produced most worth-while results. In six topics (New Product, Packaging, Standardization, Substitution, Tariff and Import Regulation, and Transportation) a higher percent of those companies without staff which did research declared that research as having produced most worth-while results (an evaluation factor of less than 1). With the exception of Tariff and Import Regulation research, which few were doing, these areas are all ones in which the buyer would be presumed very knowledgeable, or in which the services of other company departments would possibly have been obtained. Yet the average evaluation factor of 1.2 for the entire Purchased Materials, Products, or Services category shows that, in total, the results of topics researched in companies which had a purchase research staff were evaluated higher than that research done in companies which did not have a purchase research staff.

Table 7-22. Occurrence, benefit, and evaluation factors for the 18 purchased materials, products, or services research topics

Research Topics	Occurrence Factor ^a	Benefit Factor ^b	Evaluation Factor ^c
Commodity Study	1.4	2.2	1.6
Correct Order Quantity	1.4	1.6	1.1
Demand Forecast	1.6	4.5	2.1
Lease or Buy	1.4	2.3	1.3
Make or Buy	2.3	2.6	1.1
Method of Production	1.8	14	7.5
New Product	1.6	1.2	.7
Packaging	1.3	.9	.7
Price Forecast	1.7	3	1.6
Pricing Procedure	1.8	5	2.2
Scrap Disposal	1.4	1.7	1.1
Specification	1.7	1.9	1
Standardization	1.5	1.5	.9
Substitution	1.4	1.1	.8
Supply Forecast	1.8	3.5	1.7
Tariff and Import Regulation	3.5	2.5	.5
Transportation	1.7	1.5	.9
Value Analysis	1.6	2.4	1.4
AVERAGE FACTOR	1.6	1.9	1.2

^aRatio of percent of companies with staff to percent of companies without staff which researched each topic.

^bRatio of percent of companies with staff to percent of companies without staff which indicated a topic produced most worth-while results.

^cRatio of percent of companies with staff to percent of companies without staff which declared most worth-while results produced when a topic was actually researched.

Evaluation of Research Performed
by the Purchase Research Staff

That research done by the research staff was more likely to be regarded as most worth-while than that done by other individuals within the purchasing department. Thirty-six percent of the total topics researched solely by the purchase research staff were declared to have produced most worth-while results (Table 7-23). This percent is 1.8 times as large as the percent of total topics researched solely by the buyer and found to have produced most worth-while results (20%), and 1.4 times as large as the percent for total topics researched solely by the administrator and designated as most worth-while (26%).

In three topics, Correct Order Quantity, Pricing Procedure or Structure, and Transportation, the percent of work done solely by the research staff and declared to have produced most worth-while results was over twice as large as the percent for both that research done solely by the buyer and for that done solely by the administrator. On only five topics, Lease or Buy, New Product, Scrap Disposal, Substitution, and Supply Forecast, was the percent of work done solely by the buyer, and/or solely by the administrator, which was regarded as having produced most worth-while results, higher than the percent for work done solely by the research staff.

Table 7-23. Research which produced most worth-while results when done by staff, buyer, or administrator alone, in companies with purchase research staff

Research Topics	Number Cos. Researching			Percent of Cos. Researching Indicating Most Worth-while Results Produced		
	Staff Alone		Adm. Alone	Staff Alone		Adm. Alone
	Staff Alone	Buyer Alone	Adm. Alone	Staff Alone	Buyer Alone	Adm. Alone
Commodity Study	18	17	8	72%	65%	50%
Correct Order Quantity	10	22	17	80	4	29
Demand Forecast	21	8	12	14	0	9
Lease or Buy	16	10	21	19	10	26
Make or Buy	20	17	13	40	18	31
Method of Production	16	15	6	37	27	33
New Product	13	17	9	8	18	22
Packaging	15	26	7	33	23	19
Price Forecast	13	10	21	31	30	5
Pricing Procedure	13	7	9	46	14	11
Scrap Disposal	18	17	16	11	12	38
Specification	15	20	7	27	15	14
Standardization	19	14	10	42	14	40
Substitution	13	24	6	31	14	50
Supply Forecast	12	12	13	25	33	31
Tariff	12	7	12	9	0	8
Transportation	14	12	18	35	17	11
Value Analysis	20	12	8	85	25	63
AVERAGE				36%	20%	26%

Thus, results of work done by the research staff were more highly regarded, on the average, than similar work done by other purchasing personnel. This provides one measure of the effectiveness of a research staff. It can be concluded then, that if a company wishes to gain maximum results from the purchasing research that it does, it should utilize the services of staff research personnel.

Personnel Involvement

1. The Purchase Research Staff

The purchase research staff alone performed the research on one-fourth of those topics researched by companies with staff, and was involved in half of those topics researched.

Table 7-24 shows the percent of topics researched by companies with staff in which their research staff was involved. On one topic, Method of Production or Manufacture, in over half of the companies which researched this topic, the staff alone did the research. In 41% of the research on Demand Forecast and 32% of the research on Tariff and Import Regulation, the research was done by the staff alone. In the majority of topics, between 20% and 30% of the companies doing research performed this research solely with their purchase research staff. These findings show that when a company had a research staff, the company relied upon this

Table 7-24. Involvement of purchase research staff in research on purchased materials, products, or services, by company size

Company Size (Sales)	Percent of Those Cos. Researching Each Topic in Which Their Purchase Research Staff Was Involved ^a				Percent in Which Only PR Staff Involved	
	Under \$100 Million	\$100-499 Million	\$500-999 Million	\$1,000 Mil. and Over	Total	All Companies
Number of Companies with Staff	8	59	14	18	99	99
Research Topics						
Commodity Study	57%	58%	73%	73%	63%	23%
Correct Order Quantity	40	34	14	64	37	15
Demand Forecast	33	29	80	60	53	41
Lease or Buy	0	44	63	45	42	28
Make or Buy	29	50	70	64	53	26
Method of Production	0	81	33	100	74	52
New Product	67	49	40	44	47	23
Packaging	50	33	86	47	44	23
Price Forecast	0	34	70	63	43	18
Pricing Procedure	0	57	100	69	61	27
Scrap Disposal	29	42	40	62	44	27
Specification	25	50	56	54	50	23
Standardization	67	60	60	54	59	27
Substitution	60	44	50	43	45	20
Supply Forecast	0	32	70	71	45	19
Tariff and Import Regulation	0	48	20	55	45	32
Transportation	20	33	50	46	37	26
Value Analysis	33	72	56	71	67	26
Average involvement for the above topics	32	48	59	60	50	25

^aComputation of percent of total purchase research staff involvement made by (1) adding the number of topics researched by the purchase research staff alone and in combination with the buyer and/or the administrator, and (2) dividing this number by the number of companies which indicated the topic was researched.

staff to do the complete research on a substantial percentage of topics which were researched.

The purchase research staff was involved in 50% of those topics researched by companies with staff. (Each respondent could answer that a topic had been researched by the purchase research staff, the buyer, the administrator, or any combination of these three positions. When a topic was indicated as having been researched by more than one group, the assumption can be made that there probably was some interaction between these groups, and transfer of information, in the process of performing the research, although there is no assurance that this was so. It is conceivable that each group could have worked alone on specific projects within this topic.) Analysis of the total involvement of the purchase research staff in research done (Table 7-24) shows that the topic with largest total involvement (research done by the staff alone and by the staff as well as other individuals) was Method of Production or Manufacture (74% total involvement), followed by Value Analysis (67%), Commodity Study (63%), Pricing Procedure or Structure (61%), Standardization (59%), Demand Forecast (53%), Make or Buy (53%), and Specification (50%). The lowest two topics of total involvement were Correct Order Quantity and Transportation, where the research staff was indicated as doing research in only 37% of the companies which researched these topics.

The average total involvement of the staff in the total 18 topics researched increased greatly as company size increased. The average total involvement of the staff in all topics researched by companies in the smallest size category was 32%, but it increased to 48% in the next size category, and to 59% and 60%, respectively, in the next to the largest and largest size categories (Table 7-24). Perhaps these differences in total involvement can be explained by the size of the research staff. The smaller companies had the smaller size staffs; the larger companies the larger size staffs, and the larger the research staff the more topics it could become engaged in. Although no general pattern existed between company size and total research staff involvement in the research done on each topic, the following ten topics showed a general trend of increased total staff involvement with increased company size: Commodity Study, Demand Forecasts, Make or Buy, Method of Production or Manufacture, Price Forecast, Pricing Procedure or Structure, Scrap Disposal, Supply Forecast, Transportation, and Value Analysis.

The purchase research staff alone did research on an average of 2.8 topics, and was involved (indicated as doing the research alone, as well as with other individuals) in an average of 5.6 topics in those companies with a staff. This shows that while in companies with staff some topics are

researched only by the staff, the presence of staff does not preclude other individuals from also doing research on topics which the staff researches.

2. The Administrator

The administrator was involved in a smaller percentage of total topics researched in companies which had a research staff.

The administrator alone did the research on only 19% of the total topics researched in companies with staff, but on 33% of the total topics researched in companies without staff. On only one topic, Transportation, did the administrator alone perform a greater percent of the research actually done in companies with staff than he performed in companies without staff (Table 7-25).

Total administrator involvement (topics researched by the administrator alone, as well as topics researched by the administrator, plus other individuals) on all topics researched by companies with staff was 41%, but it was 51% in companies without staff (Table 7-25). From this it can be concluded that the total involvement of the administrator on topics actually researched is smaller in those companies which have a research staff.

The average number of topics on which the administrator alone was involved was approximately the same in

Table 7-25. Administrator involvement in purchase research on purchased materials, products, or services in companies researching each topic

Percent of those companies <u>researching</u> each topic in which administrator was involved ^a				
Research Topics	Companies with Staff		Companies without Staff	
	Administrator Alone	Administrator; Adm. & Buyer; Adm. & PR; Adm., PR & Buyer	Administrator Alone	Administrator and Buyer
Commodity Study	10%	40%	27%	47%
Correct Order Quantity	25	43	26	38
Demand Forecast	24	37	51	63
Lease or Buy	37	51	55	71
Make or Buy	17	41	44	63
Method of Production	20	35	31	51
New Product	16	35	27	43
Packaging	11	23	26	45
Price Forecast	28	57	50	67
Pricing Procedure	18	51	45	65
Scrap Disposal	23	41	38	48
Specification	11	33	24	41
Standardization	14	41	23	43
Substitution	9	27	11	28
Supply Forecast	21	47	49	64
Tariff and Import Regulation	32	42	57	70
Transportation	33	48	28	41
Value Analysis	11	43	18	53
Average involvement	19	41	33	51

^aPercent is not a percent of the 99 or 205 companies. It is a percent of those companies which indicated they did research in each area. For example, the Commodity Study topic was researched by 80 of the companies with staff and 114 of the companies without staff.

companies with and without a staff. He was involved alone in an average of 2.2 topics in companies with staff, and 2.3 topics in companies without staff (Table 7-26). The average number of topics in which the administrator alone, and alone and in combination with other individuals, was involved was greater in companies with staff. The administrator, in total, was involved in an average of 4.6 research topics in companies with staff, but only 3.5 topics in companies without staff. Thus the administrator was involved in 1.3 times as many topics in companies with staff, but this increase was not as great as the increase in number of topics researched (companies with staff researched 1.6 times as many topics).

From the above data it can be concluded that in companies with staff the administrator is less likely to become involved in that research done, for specialized staff is available to perform some of the research. However, in companies with staff, the administrator becomes involved in a larger total number of topics, because many more topics are researched. The increase in the average number of topics in which the administrator is involved, however, is not as great as the increase in number of topics researched, due to the assistance by the research staff.

Table 7-26. Administrator involvement in research on purchased materials, products, or services

Research Topics	Percent of Companies in Which Administrator Was Involved in Research ^a			
	99 Companies w/Staff		205 Companies w/o Staff	
	Administrator Alone	Administrator; Adm. & Buyer; Adm. & PR; Adm., PR & Buyer	Administrator Alone	Administrator and Buyer
Commodity Study	8%	32%	15%	26%
Correct Order Quantity	17	29	13	19
Demand Forecast	12	19	16	20
Lease or Buy	21	29	23	29
Make or Buy	13	32	15	21
Method of Production	6	11	5	9
New Product	9	20	9	15
Packaging	7	15	13	23
Price Forecast	21	42	22	30
Pricing Procedure	9	25	12	18
Scrap Disposal	16	28	19	23
Specification	7	21	9	16
Standardization	10	29	11	20
Substitution	6	17	5	13
Supply Forecast	13	29	17	22
Tariff & Import Regulation	12	16	6	8
Transportation	18	26	9	13
Value Analysis	8	33	8	25
AVERAGE PERCENT	12%	25%	13%	20%
AVERAGE NO. TOPICS INVOLVED IN	2.2	4.6	2.3	3.5

^aPercentage was calculated on the total number of companies in each group and not only those which researched each topic.

3. The Buyer

The buyer was involved in a higher percent of those topics actually researched in companies without staff than in companies with staff. The buyer alone did the research on 49% of the topics actually researched by companies without staff, but on only 24% of the topics researched by companies with staff. Total buyer involvement (research done by the buyer alone, plus research topics on which the buyer as well as other individuals worked) in topics researched showed the buyer involved in 67% of the topics in companies without staff, and only in 52% of the topics in companies with staff (Table 7-27).

Thus, on a given topic on which research was done, the buyer was less likely to be involved in companies which had a staff. One of the functions of the staff is to assist line personnel and to relieve them of some of their duties in order that they may concentrate their efforts on areas in which they are best qualified. The research staff does relieve the buyer of part of the research work on topics actually researched.

The buyer alone also was involved in research on more total topics in companies without research staff. He was involved in an average of 3.4 topics in companies without staff, and in only 2.7 topics in companies with staff. However, in companies with staff the buyer was involved in total (topics researched by the buyer alone and by the buyer and other

Table 7-27. Buyer involvement in purchase research on purchased materials, products, or services in companies researching each topic

Research Topics	Companies with Staff			Companies without Staff	
	Buyer Alone	Buyer; Buyer & PR; Buyer & Adm.; Buyer, Adm. & PR	Buyer Alone	Buyer and Administrator	
Percent of those companies researching each topic in which buyer was involved ^a					
Commodity Study	21%	61%	53%		73%
Correct Order Quantity	33	57	62		73
Demand Forecast	16	33	37		51
Lease or Buy	18	25	29		45
Make or Buy	22	49	37		56
Method of Production	48	81	51		71
New Product	30	56	56		73
Packaging	41	64	55		74
Price Forecast	14	49	33		50
Pricing Procedure	14	37	35		55
Scrap Disposal	25	46	52		61
Specification	31	61	59		76
Standardization	20	51	57		77
Substitution	38	70	72		89
Supply Forecast	19	56	36		51
Tariff & Import Regulation	18	34	30		43
Transportation	22	37	58		72
Value Analysis	16	59	47		82
Average involvement for the above topics	24	52	49		67

^a Percent is not a percent of the 99 or 205 companies. It is a percent of those companies which indicated they did research in each area. For example, Commodity Study was done by 80 of the companies with staff, and 114 of those companies without staff.

Table 7-28. Buyer involvement in research on purchased materials, products, or services

Research Topics	Percent of Companies in Which Buyer Was Involved in Research ^a			
	99 Companies w/Staff		205 Companies w/o Staff	
	Buyer Alone	Buyer; Buyer & PR; Buyer & Adm.; Buyer, Adm. & PR	Buyer Alone	Buyer; Buyer and Administrator
Commodity Study	17%	49%	29%	40%
Correct Order Quantity	22	38	30	36
Demand Forecast	8	17	12	16
Lease or Buy	10	14	12	19
Make or Buy	17	38	13	19
Method of Production	15	25	9	12
New Products	17	32	20	25
Packaging	26	41	28	38
Price Forecast	10	36	15	22
Pricing Procedure	7	18	9	15
Scrap	17	31	25	30
Specification	20	39	22	29
Standardization	14	36	27	36
Substitution	24	45	32	40
Supply Forecast	12	35	13	18
Tariff & Import Regulation	7	13	3	5
Transportation	12	20	19	23
Value Analysis	12	45	22	39
AVERAGE PERCENT	15%	32%	19%	26%
AVERAGE NO.TOPICS INVOLVED IN	2.7	5.8	3.4	4.6

^aPercentage was calculated on the total number of companies in each group and not on only those which researched each topic.

individuals) in a greater average number of topics in companies with staff. In total, the buyer was involved in an average of 5.8 topics in companies with staff, but in only 4.6 topics in companies without staff (Table 7-28). This higher total involvement of the buyer in companies with staff occurred primarily because of the larger number of topics researched by companies with staff.

From this it can be concluded that while the average number of topics on which the buyer alone does research is smaller in companies with staff, and his involvement in a particular topic researched is likely to be less, he actually becomes involved in more research topics, as part of a group, in companies with staff, because research is done on more topics. Or to state it another way, the buyer's percent of the whole is less, but the whole is considerably larger.

Chapter Summary

Conclusions regarding purchasing research on Purchased Materials, Products, or Services were made by a comparison of the 99 companies with a purchase research staff and the 205 companies without staff which responded to the mail questionnaire.

Companies with a purchase research staff researched, on the average, 1.6 times as many topics in the Purchased Materials, Products, or Services category as those companies

without staff. Each of the 18 topics in this category was researched by a larger percent of companies with staff than without staff.

The percent of companies with staff which declared research topics produced most worth-while results was, on an average, 1.9 times as large as the percent for companies without staff. Of those topics actually researched, companies with staff evaluated the research as having produced most worth-while results 1.2 times as frequently as companies without staff.

There appeared to be a positive relation between company size and percent of topics on which research was done in the companies with staff, but not in the companies which did not have staff.

In all but two industry classifications, a larger number of topics were researched by companies with staff. The five industries in which the largest percent of companies with staff did research on the total topics in the research on Purchased Materials, Products, or Services category were: Stone, Clay, and Glass (78%); Fabricated Metal Products (73%); Chemicals (73%); Food and Tobacco (67%); and Electrical Machinery, Equipment, and Supplies (67%).

An analysis was made in this chapter of each of the 18 individual research topics in this category. These topics were: Commodity Study, Correct Order Quantity, Demand Forecast, Lease or Buy, Make or Buy, Method of Production or Manufacture, New Product, Packaging, Price Forecast, Pricing Procedure or Structure, Scrap Disposal, Specification, Standardization, Substitution, Supply Forecast, Tariff and Import Regulation, Transportation, and Value Analysis. A description of each topic was given, and an example of this type research was presented, where possible, from one of the ten companies interviewed. Additionally, a table was presented for each topic to show, by industry classification, the percent of companies which researched the topic, and declared most worthwhile results from the topic.

Research done by the staff research personnel was regarded as producing most worth-while results more frequently than research done by others within the purchasing department. In those companies with staff, the percent of topics researched solely by the staff which were declared to have produced most worth-while results was 1.8 times as large as the percentage for topics done solely by the buyer, and 1.4 times as large as the percentage for topics done solely by the administrator.

The purchase research staff was involved (either doing the research alone or in conjunction with the buyer or administrator or both) in 50% of the topics researched in the companies with staff. The average involvement of the research staff in topics researched increased with company size. The purchase research staff alone did the research on an average of 25% of the topics researched in the companies with staff. The staff alone researched an average of 2.8 topics, and was involved in research on an average of 5.6 topics.

The purchasing administrator was involved, both alone and with other individuals, in a smaller percent of the topics researched in companies with staff than in those without staff. The percent of topics researched in which the administrator alone was involved was 1.7 times greater in companies without staff. Total administrator involvement was 1.2 times greater in those topics researched by companies without staff. The average number of total topics on which the administrator alone did research was approximately the same in companies with and without staff (2.2 and 2.3). The average number of topics on which the administrator, alone and with others, was involved was larger in those companies with staff (4.6 to 3.5), primarily because the number of topics researched was much larger in companies with staff.

In companies without staff, the buyer was involved in a larger percent of the topics actually researched. The involvement of the buyer alone in topics actually researched was twice as large in companies without staff; the involvement of the buyer alone and conjunction with other persons was 1.3 times greater in the companies without staff. The average number of total topics on which the buyer alone did research was larger in those companies without staff (3.4 to 2.7); however, the average number of total topics on which the buyer alone and with other members of the department became involved was 1.3 times greater in companies with staff than in those without (5.8 to 4.6), because companies with staff researched a larger number of topics.

The increase in average number of topics in which the administrator, and the buyer, were involved in companies with staff was not as great as the increase in total topics researched by companies which had staff.

CHAPTER VIII

RESEARCH ON VENDORS

Introduction

The second major category of research topics, Research on Vendors, includes those topics primarily concerned with the sources from which particular materials, products, or services are purchased. As noted earlier, the assignment of particular topics to one of the three major categories-- Purchased Materials, Products, or Services; Vendors; or The Purchasing System--was somewhat arbitrary, for research on a particular topic might necessitate investigation into the material itself, the sources from which it is purchased, and the method by which it is purchased.

This chapter discusses research done, the evaluation of research results, and the involvement of the purchase research staff, the administrator, and the buyer in the Research on Vendors category. Each of the nine individual research topics in this category also is discussed, and the occurrence, benefit, and evaluation factors are computed for purposes of analysis. Since this chapter and the following chapter (Chapter IX: Research on The Purchasing System) present the same type of analysis of the topics in each category as Chapter VII did for topics in the Purchased Materials, Products, or

Services category, the remarks in the Introduction to Chapter VII about the methods by which data were obtained, the limitations of these data, and the analysis of data apply here also.

Topics Researched

Those companies with a purchase research staff researched 1.8 times as many topics in the Research on Vendors category as those companies without staff. Those companies with staff indicated research done during 1959 or 1960 on an average of 57% of the total topics in this category, while those without staff did research on only 31% of these topics (Table 8-1). Without exception, a higher percentage of companies with staff indicated research done on each of the nine topics than was indicated by companies without staff. The four topics which had a higher occurrence factor¹ than the 1.8 average occurrence factor for the Research on Vendors category were (figure in brackets is the occurrence factor): Estimate of Distribution Costs (3.1), Estimate of Manufacturing Costs (3), Supplier Attitude Survey (2.3), and Vendor Sales Strategy (2). Trade Relations Data was the topic with the smallest occurrence factor, although even on this topic the percent of companies which did research was 1.4 times larger than the percent of

¹The occurrence factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which researched a topic.

Table 8-1. Companies researching vendor topics; percent indicating most worth-while results

Research Topics	Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
			All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Analysis of Financial Capacity	55%	77%	44%	1%	1%	1%	1%	3%
Analysis of Production Facilities	60	84	47	6	7	5	10	8
Finding Potential Supply Source	65	84	56	10	10	10	15	12
Estimate of Distribution Costs	15	28	9	2	5	1	13	18
Estimate of Manufacturing Costs	29	51	17	2	3	1	6	6
Supplier Attitude Survey	22	35	15	2	2	2	8	6
Trade Relations Data	45	56	40	11	11	11	25	20
Vendor Performance Evaluation	52	74	41	8	13	6	16	18
Vendor Sales Strategy	15	22	11	2	3	1	13	14
AVERAGE	40%	57%	31%	5%	7%	4%	12%	11%
								14%

companies without staff which researched this topic.

From the above information on the occurrence factors for topics in this category, and a comparison of the percent of companies with and without staff which did research on each of the nine topics in this category (Table 8-1), the following conclusion is indicated: Companies with a purchase research staff are more likely to research topics in the Vendor category than are companies without staff.

There was considerable difference in the percent of companies, both with and without staff, which did research on the various topics within this category. The two topics researched by the highest percent of companies with staff, Finding Potential Supply Source and Analysis of Production Facilities, were both researched by 84% of those companies with staff. The topics within the lowest, and next to the lowest percent of companies with staff which did research were, respectively, Vendor Sales Strategy and Estimate of Distribution Costs, with 22% and 28% of the companies researching. The topic, Finding Potential Supply Source, also had the highest percent of companies without staff researching (56%), while Estimate of Distribution Costs was the topic on which the smallest percentage of companies without staff did research (9%).

The relative rank of percentages of companies with staff,

and those without staff, which researched each topic was almost identical, although as previously pointed out, on all nine topics a higher percent of those companies with staff did research than those without staff.

Topics Produced Most Worth-while Results

Those companies with purchase research staff declared 1.8 times as many topics in the Research on Vendors category had produced most worth-while results as was declared by companies without staff. The percent of both companies with, and those without, purchase research staff which declared topics in this category had produced worth-while results was small. Seven percent of the topics were declared as having produced most worth-while results by companies with staff; only 4% by companies without staff (Table 8-1). On all nine topics in this category, the percent of companies with staff which declared most worth-while results were produced was as large, or larger than the percent of companies without staff. The percent for companies with staff was larger than that for companies without staff on the following five topics (figure in brackets is the benefit factor,² computed from Table 8-1). Estimate of

²The benefit factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which indicated a topic produced most worth-while results.

Distribution Costs (5), Vendor Sales Strategy (3), Estimate of Manufacturing Costs (3), Vendor Performance Evaluation (2.2), and Analysis of Production Facilities (1.4). The percent was the same for both groups on four topics in this category.

From the data presented in Table 8-1, the following conclusion is indicated: Although relatively few topics in the Research on Vendors category are found to produce most worth-while results, companies with staff are more likely to produce most worth-while results in this area than companies without staff.

The average evaluation factor,³ computed from Table 8-1 is .8, which shows that a larger percent of companies without staff than with staff regarded research actually done on these topics as having produced most worth-while results. An average of 14% of total topics actually researched by companies without staff were regarded as having produced most worth-while results, compared to only 11% in companies with staff. The four individual topics with an evaluation factor greater than 1 are as follows: Estimate of Distribution Costs, Estimate of Manufacturing Costs, Vendor Performance Evaluation, and Vendor Sales Strategy. In several of the individual topics the number of companies which indicated the most worth-while results was small, and thus the evaluation factors may not be too meaningful. These evaluation factors are discussed later in this chapter, and are summarized in Table 8-13.

³The evaluation factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which declared most worth-while results produced when a topic was actually researched.

Relation Between Company Size and Research Done

Company size did not appear to affect the number of topics researched, in either the companies with staff or those without staff. Table 8-2 shows that the average percent of topics researched remained approximately the same, in both groups, as company size increased. On only two topics, Analysis of Production Facilities and Trade Relations Data, did the percent of companies with staff which did research increase with increased company size, although even on these two topics the differences in percent of companies researching in the four different size categories was not great.

Relation Between Industry Classification and Research Done

The tendency for companies with a purchase research staff to do research on more topics held true in all but one of the 17 industry classifications. The only exception, as Table 8-3 shows, is Textile Mill Product and Apparel, where an average of 49% of the total topics were researched by companies without staff, and only 44% of the total topics were researched by the one company with staff. In eight of the fourteen industry classifications in which companies had staff, an average of 50% or more of the topics were researched, but in none of the industry classifications did companies without staff research as many as 50% of the total topics.

Table 8-2. Companies researching vendor topics, by company size

		Company Size (1959 Sales, Million Dollars)									
		Under 100		100-499		500-999		1,000 and Over			
		w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Number of Respondents		8	52	59	121	14	21	18	11		
<u>Research Topics</u>											
Analysis of financial capacity		75%	40%	86%	47%	64%	38%	61%	36%		
Analysis of production facilities		75	44	85	49	86	48	89	45		
Finding potential supply source		88	56	83	57	93	57	83	45		
Estimate of distribution costs		25	10	27	9	36	14	28	0		
Estimate of manufacturing costs		50	13	49	18	43	24	67	18		
Supplier attitude survey		38	17	37	14	21	19	39	9		
Trade relations data		50	37	53	40	64	48	67	45		
Vendor performance evaluation		75	46	76	40	57	38	83	36		
Vendor sales strategy		25	13	20	10	14	14	33	9		
AVERAGE PERCENT		56	31	57	32	53	33	61	27		

Table 8-3. Companies researching vendors, by standard industrial classification

Industry Group	Number of Companies		Percent Researching	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	9	37	57%	33%
Transportation Equipment	17	20	59	45
Chemicals	13	20	69	36
Machinery, except Electrical	14	16	56	34
Primary Metals	10	18	44	38
Electrical Machinery, Equipment and Supplies	9	15	67	30
Paper	3	13	37	20
Crude Petroleum	7	8	59	14
Fabricated Metal Products	5	10	69	34
Stone, Clay, Glass	4	8	47	31
Textile Mill Product and Apparel	1	9	44	49
Ordinance; Leather; Professional, Scientific, Optical; Misc. Mfg.	4	5	58	38
Mining	2	5	44	18
Petroleum Refining	0	6	--	38
Rubber and Plastics	0	6	--	17
Lumber and Wood	1	4	33	31
Printing and Publishing	0	5	--	31
AVERAGE			57%	31%

In the following industry classifications the percent of topics researched by companies with staff was particularly large (average percent of topics researched is in brackets): Chemicals (69%), Fabricated Metal Products (69%), Electrical Machinery, Equipment, and Supplies (67%), Transportation Equipment (59%), and Crude Petroleum and Natural Gas (59%). For those interested in a more detailed analysis by industry classification, Appendix 2 presents, by industry, the percent of companies with and without staff which researched each topic, the percent which declared each topic produced most worth-while results, and the percent which declared most worth-while results produced when a topic was researched.

In the following sections, each of the nine individual research topics is discussed. Where possible, for each topic an example is given of a project done by one of the ten companies interviewed. Additionally, a table is presented to show, by industry classification, the percent of companies with and without staff which researched each topic, declared each topic produced most worth-while results, and declared each topic produced most worth-while results when actually researched. The occurrence, benefit, and evaluation factors are computed for each table, and in addition are summarized for all nine topics in Table 8-13.

Analysis of Financial Capacity

Research on this topic would be directed at a thorough analysis and projection of vendor financial status, as it might affect vendor-vendee relationships. One key factor in evaluation of potential vendors is the vendor's financial status, and the likelihood that the vendor will be able to complete the purchase agreement. A successful vendor must possess sufficient financial resources to "carry" the manufacturing, selling, and administrative costs of the merchandise until such time as delivery is made and he receives payment. If a particular purchase exceeds his financial capabilities, special arrangements must be negotiated. Frequently this financial analysis might be performed by the purchaser's finance or accounting department; however, in some companies this financial analysis may be made within the purchasing department, for the purchasing personnel may have a better "feeling" for the vendor's situation, and also they may be in a better position to obtain the financial data necessary to make this analysis.

Table 8-4 presents information, by industry classification, on the percent of companies which researched this topic, and which declared results of the research on this topic as most worth-while. Computation from Table 8-4 indicates an average occurrence factor of 1.8, showing that 1.8 times as

many companies with staff engaged in research on this topic as those without staff. The average percent of companies with and without staff doing research on this topic was 77% and 44%, respectively. In all but one industry in which some companies had staff, at least half the companies with staff researched this topic. In all industries but one, some of the companies without staff did research on this topic, but the percent of companies without staff which did research was smaller than the percent of companies with staff (the one exception was Lumber and Wood Products, where only one company had staff).

Few industrial classifications regarded this topic as having produced most worth-while results. For those which did, the average benefit factor (computed from Table 8-4) is 1, showing that the percent of companies both with and without staff, which declared most worth-while results and produced from this topic, was the same. Companies in only four industries--Food and Tobacco; Chemicals; Machinery, except Electrical; and Primary Metals--declared this topic as producing most worth-while results, showing that, on the whole, this topic was not regarded by many companies as having produced most worth-while results. The evaluation factor is .3, indicating that of the few firms which researched and declared this topic producing most worth-while results,

companies without staff regarded the results more highly than those with staff.

Analysis of Production Facilities

Research on this topic would involve gathering, analyzing, and evaluating data regarding the physical resources of vendor organizations. Frequently, this can only be done by visits to vendor locations to observe and measure the equipment and technology possessed by the vendor. Results of such research not only assist in decisions on the ability of a vendor to produce a needed material or part, but also are a key factor in determination of a price which would be fair to a vendor, and in investigation and suggestion of alternative production methods. Obviously, the amount of this type of research that would be considered advisable depends, in large part, upon the purchased material or part in question, its complexity, and its relative importance in the total purchasing pattern.

Eighty-four percent of the total companies with purchase research staff indicated they did research on the Analysis of Production Facilities topic, while only 47% of those without staff researched this topic (Table 8-5), producing an occurrence factor of 1.8. In all industry groups but one (Lumber and Wood Products) a higher percentage of those companies with staff indicated they had researched this topic than was indicated by companies without staff. In the

Table 8-5. Analysis of Production Facilities

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	52%	78%	46%	4%	11%	3%	8%	14%
Transportation Equip.	17	20	70	94	50	8	12	5	11	13
Chemicals	13	20	82	100	70	6	0	10	7	0
Machinery, except Electrical	14	16	70	86	56	10	7	12	14	8
Primary Metals	10	18	61	70	56	4	0	6	6	0
Electrical Machinery, Equip. and Supplies	9	15	63	89	47	8	12	7	13	13
Paper	3	13	25	67	15	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	40	86	0	0	0	0	0	0
Fabricated Metal Prod.	5	10	67	100	50	7	0	10	10	0
Stone, Clay and Glass	4	8	58	100	38	0	0	0	0	0
Textile Mill Product and Apparel	1	9	70	100	67	0	0	0	0	0
Ordinance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	44	50	40	11	0	20	25	0
Mining	2	5	29	50	20	0	0	0	0	0
Petroleum Refining	0	6	50	--	50	0	--	0	0	--
Rubber and Plastics	0	6	33	--	33	0	--	0	0	--
Lumber and Wood Prod.	1	4	60	0	75	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	20	--	20	33	--
AVERAGE			60	84	47	6	7	5	10	8
										11

following four industries all the companies with staff researched this topic: Chemicals; Fabricated Metal Products; Stone, Clay, and Glass Products; and Textile Mill and Apparel (only one company with staff).

Seven percent of those companies with staff indicated they had produced most worth-while results from this topic. Five percent of companies without staff indicated most worth-while results produced. Comparison of the above two percentages indicates a benefit factor of 1.4, showing that those with staff rated this topic higher as producing most worth-while results. The evaluation factor, computed from Table 8-5 is .7, indicating that a larger percent of those companies without staff which researched this topic indicated it produced most worthwhile results than was indicated by companies with staff. Eleven percent of those companies without staff which actually researched this topic declared it as producing most worth-while results, while only 8% of companies with staff which researched this topic declared it producing most worth-while results.

Finding Potential Supply Source

Research in this area would be done for one of two reasons:

- (1) to secure new sources for an already existing item; and/or
- (2) to locate, encourage, and assist a vendor(s) in producing an item not presently available. Frequently, in attempting to

develop new sources for an existing item, an exhaustive search must be made, with a constant evaluation of newly-located, potential sources to eliminate those vendors who would be unable to perform satisfactorily. Developing sources which could produce an item not presently available is a time-consuming and complex task, and often of vital importance.

In one of the companies interviewed, this type of research consumed a large part of the time of the Purchase Analyst. This company was in the chemical industry where, due to product advancement, chemicals which previously were needed and produced only in research quantities suddenly might be required in production quantities. The Purchase Analyst worked with the various vendors to secure needed, larger quantities and frequently assisted vendors in beginning production on items they had not produced formerly. Normally, a different manufacturing process was used for production quantities than was used for research quantities, and the Analyst assisted the vendor in working out production problems occasioned by the different manufacturing process.

More companies with a purchase research staff did research on the Finding Potential Supply Source topic than companies without a research staff. Table 8-6 shows that 84% of companies with staff, on the average, researched this topic, and only 56% of companies without staff researched this topic, or

Table 8-6. Finding Potential Supply Source

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting		Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	Total	w/ Staff	Total	w/ Staff	Total	w/o Staff
Food and Tobacco	9	37	67%	89%	62%	9%	22%	6%	13%	25%
Transportation Equip.	17	20	65	88	45	8	11	5	13	13
Chemicals	13	20	79	92	70	9	0	15	12	0
Machinery, except Electrical	14	16	67	71	63	23	14	32	35	20
Primary Metals	10	18	68	70	67	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15	67	89	53	9	0	13	13	0
Paper	3	13	44	67	38	6	0	8	14	0
Crude Petroleum and Natural Gas	7	8	53	86	25	0	0	0	0	0
Fabricated Metal Prod.	5	10	60	100	40	13	20	10	22	20
Stone, Clay and Glass	4	8	83	100	75	25	50	13	30	50
Textile Mill Product and Apparel	1	9	90	100	89	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	75	60	22	25	20	33	33
Mining	2	5	57	100	40	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	--
Rubber and Plastics	0	6	33	--	33	0	--	0	0	--
Lumber and Wood Prod.	1	4	60	100	50	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	0	--	0	0	--
AVERAGE			65	84	56	10	10	10	15	12
										17

an average occurrence factor of 1.5. In all industries, research was done on this topic by some or all of the companies both with and without staff, but the percent of companies with staff which did research was greater in all industries.

Ten percent of the total companies in both groups, with and without staff, indicated this topic produced most worthwhile results, or a benefit factor of 1. The evaluation factor, computed from Table 8-6 is .7, which shows that companies without staff which researched this topic evaluated the results of the research more highly than the companies with staff. Seventeen percent of companies without staff which did research on Finding Potential Supply Source indicated that research produced most worthwhile results; 12% of those with staff which researched the topic declared most worthwhile results were produced.

Estimate of Distribution Costs

In many purchased materials and products a large part of the total purchase price is made up of selling, administrative, delivery, and servicing costs; therefore, research on this topic may offer substantial potential for cost reduction. The vendor's price must include amounts to compensate for distribution and related costs, and purchase research on this topic would attempt to determine whether the amounts of compensation for these costs are reasonable, and competitive,

and whether or not such distribution costs actually are necessary.

In one of the companies interviewed, a substantial part of the total expense of many vendors was allocated to product development and applied research, and to vendor technical service. This technical service often took the form of extended visits by vendor technical personnel to assist in the solution of manufacturing problems and to keep research personnel in the purchasing company current on new and anticipated material developments. The Purchase Analyst made frequent studies directed at determining what part of the total purchase price paid to a vendor was allocated to areas such as vendor technical assistance, and whether or not the purchaser got "value received" from this expense. The evaluation of benefits received from this technical service provided by the vendor was an influential factor in determining future placement of business.

The average occurrence factor for the Estimate of Distribution Costs topic, computed from Table 8-7, is 3.1. The average percent of companies, both with and without staff, which indicated research on this topic was not large (28% and 9%, respectively). In only three industries did fifty percent or more of those companies with staff indicate they researched this topic: Textile Mill and Apparel (only one

Table 8-7. Estimate of Distribution Costs

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting		Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	15%	33%	11%	2%	0%	3%	14%	0%
Transportation Equip.	17	20	14	24	5	3	6	0	20	25
Chemicals	13	20	24	46	10	12	31	0	50	67
Machinery, except Electrical	14	16	17	29	6	0	0	0	0	0
Primary Metals	10	18	7	0	11	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15	13	33	0	0	0	0	0	0
Paper	3	13	6	0	8	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	20	29	13	0	0	0	0	0
Fabricated Metal Prod.	5	10	33	60	20	0	0	0	0	0
Stone, Clay and Glass	4	8	17	0	25	0	0	0	0	0
Textile Mill Product and Apparel	1	9	30	100	22	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	22	25	20	0	0	0	0	0
Mining	2	5	14	50	0	0	0	0	0	0
Petroleum Refining	0	6	0	--	--	0	--	0	0	--
Rubber and Plastics	0	6	0	--	--	0	--	0	0	--
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0
Printing and Publishing	0	5	0	--	--	0	--	0	0	--
AVERAGE			15	28	9	2	5	1	13	18
										6

company with staff), (100%); Fabricated Metal Products (60%); and Mining (50%). The industry in which the largest percentage of companies without staff indicated research on this topic was Stone, Clay and Glass Products, in which 25% of the companies did research.

The average benefit factor, computed from Table 8-7, is 5, and the evaluation factor is 3. However, Table 8-7 shows that the percentage of companies which indicated this topic as having produced most worth-while results was so small, that these two factors probably are not meaningful. In total (both companies with and without staff), only six firms indicated this topic produced most worth-while results: one firm without staff in Food and Tobacco, one firm with staff in Transportation Equipment, and four firms with staff in Chemicals.

Estimate of Manufacturing Costs

As a basis for determining a reasonable purchase price, the vendor's cost to manufacture an item in question might be investigated. A particular vendor's product might not warrant a price large enough to cover his manufacturing costs, particularly if he is using inefficient manufacturing methods or equipment. An analysis of manufacturing costs, either actual or ideal, is one of the basic purchasing techniques useful in evaluating the price paid, or asked, for purchased

items. Such an analysis also may be used to judge the reasonableness of a vendor's claims that price should be adjusted because of increased manufacturing costs, due to higher material or labor costs.

In one company interviewed, the Purchase Analysis Department made estimates of manufacturing costs, for the use of the buyer, on all major purchased items whenever any price increase was requested by a vendor. Through investigation and knowledge of the particular industry and reasonable production standards within that industry, the Purchase Analyst was able to "build up" an approximate "cost to manufacture" for major purchased items. For example, as a result of this research by the Purchase Analyst, the purchase price of castings was determined by a formula, based on the cost of major raw materials consumed in producing these castings. A new price automatically was determined as raw material costs changed.

Table 8-8 shows that those companies with a purchase research staff predominated in research done on the Estimate of Manufacturing Costs research topic. An average of 51% of those companies with staff researched this topic, compared to only 17% of the companies without staff, or an occurrence factor of 3 on this topic. The Food and Tobacco industry had the largest percent of companies with staff which indicated

Table 8-8. Estimate of Manufacturing Costs

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/o Staff
Food and Tobacco	9	37	33%	78%	22%	0%	0%	0%	0%	0%
Transportation Equip.	17	20	41	71	15	3	6	0	7	8
Chemicals	13	20	36	77	10	0	0	0	0	0
Machinery, except Electrical	14	16	33	43	25	3	7	0	10	17
Primary Metals	10	18	18	30	11	4	10	0	20	33
Electrical Machinery, Equip. and Supplies	9	15	46	67	33	4	0	7	9	0
Paper	3	13	6	0	8	6	0	8	100	0
Crude Petroleum and Natural Gas	7	8	13	29	0	0	0	0	0	0
Fabricated Metal Prod.	5	10	27	40	20	0	0	0	0	0
Stone, Clay and Glass	4	8	17	0	25	0	0	0	0	0
Textile Mill Product and Apparel	1	9	40	0	44	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	44	75	20	0	0	0	0	0
Mining	2	5	0	0	0	0	0	0	0	0
Petroleum Refining	0	6	17	--	17	0	--	0	0	--
Rubber and Plastics	0	6	17	--	17	0	--	0	0	--
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0
Printing and Publishing	0	5	0	--	0	0	--	0	0	0
AVERAGE			29	51	17	2	3	1	6	6

research done (78%), followed by Chemicals (77%). In all industries of a metal working type, at least 30% of firms with staff researched this topic, and in many of the metal working industries the percent of those with staff which did research was much larger. In companies without staff in the metal working industries, the industry in which the largest percent of firms without staff did research on this topic (Electrical Machinery, Equipment, and Supplies) showed only 33% of firms doing research.

The percent of the total firms which indicated research on this topic produced most worth-while results was small, in both the group with, and that without, staff. Three percent of the total firms with staff indicated this topic had produced most worth-while results, compared with only 1% of firms without staff, indicating a benefit factor of 3. In only three industries (Transportation Equipment; Machinery, except Electrical; and Primary Metals) did any of the firms with staff indicate most worth-while results produced, and only in two industries (Electrical Machinery, Equipment, and Supplies; and Paper) was this indicated by any of the companies without staff. The evaluation factor, computed from Table 8-8, is 1, showing that of those companies which actually researched this topic, the percent which declared most worth-while results produced was the same for the companies with and without staff. However, because of

the small number of firms in each category which indicated this topic produced most worth-while results, this factor may not be too meaningful.

Supplier Attitude Survey

This research would consist of attempts to determine the satisfactoriness of vendor-purchaser relationships, from the standpoint of the various vendors with which the company did business. Since there might be considerable reluctance on the part of vendors to pinpoint some of the problem areas in their relationship with the purchaser, often it might be advisable to elicit such information by a questionnaire on which the vendors could express their problems and opinions anonymously. Constructive opinions volunteered might be invaluable in bringing to light areas of conflict, or potential conflict, not presently recognized.

Such an approach was part of a supplier relations program initiated in one of the companies interviewed. This company employed a supplier attitude questionnaire which was administered by an outside opinion sampling firm, although the Purchase Analyst assisted in formulating the study. Results of the questionnaire attitude survey pointed up areas where sound vendor relationships needed improvement. In the report describing results of this survey the following statement was made:

In late 1956 we in Purchasing were encouraged to intensify our search for better ways to buy--to help meet increasing foreign and domestic competition. At that time we felt the production needs were being met at reasonable costs but there were other disquieting signs. Suppliers thought of us as a demanding and unappreciative customer. Suppliers were not thought of as a major source of new ideas. Competitor intelligence was weak. Soul-searching and hard-headed analysis developed the feeling that our initial problems were more in the area of "how" we were doing business than in "what" business was being done.

Companies with a purchase research staff did more research on the Supplier Attitude Survey topic than companies without staff, as the occurrence factor (computed from Table 8-9) of 2.3 shows. An average of 35% of companies with staff did research on this topic, compared to 15% of those companies without staff. In all but three of the fourteen industries in which companies had staff, the percent of companies with staff which researched this topic was larger than it was for companies without staff.

The percent of both companies with, and those without, staff which declared this topic produced most worth-while results was the same (2%), producing a benefit factor of 1. In only five industries did any of the companies, either with or without staff, indicate this topic as one which produced most worth-while results. The evaluation factor, computed from Table 8-9, is .6, but due to the small number of firms involved, this factor may not be too meaningful.

Trade Relations Data

Research in this area might involve recording and analyzing the results of various reciprocal relations which have been developed between buyer and seller. Not only would such agreements have to be "policed" to assure that the initial agreements were being satisfactorily discharged, but the effect of such arrangements on purchasing efficiency should be evaluated, as a basis for decisions on future advisability of the same or similar such agreements. While reciprocity should not be summarily avoided, efficient company operation requires that cost-benefit evaluations be made at frequent intervals.

Fifty-six percent of those companies with staff indicated they had done research on the Trade Relations Data topic during 1959 or 1960, while only 40% of those companies without staff indicated they had researched this topic (Table 8-10). Comparison of these percents indicates an occurrence factor of 1.4. In only four industries did a larger percent of companies without staff than with staff research this topic.

In both those companies with staff and those without staff the same percent of companies (11%) declared this topic as having produced most worth-while results. Comparison of these percentages indicates a benefit factor of 1. The

Table 8-10. Trade Relations Data

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting		Only Companies Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	24%	44%	19%	2%	11%	0%	9%	25%
Transportation Equip.	17	20	24	24	25	0	0	0	0	0
Chemicals	13	20	58	69	50	15	8	20	26	11
Machinery, except Electrical	14	16	50	50	50	17	15	19	33	29
Primary Metals	10	18	75	80	72	18	10	22	24	13
Electrical Machinery, Equip. and Supplies	9	15	33	67	13	0	0	0	0	0
Paper	3	13	63	33	69	32	33	30	50	100
Crude Petroleum and Natural Gas	7	8	53	86	25	27	43	13	50	50
Fabricated Metal Prod.	5	10	47	60	40	14	20	10	29	33
Stone, Clay and Glass	4	8	58	100	38	8	25	0	14	25
Textile Mill Product and Apparel	1	9	40	0	44	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	44	50	40	11	0	20	25	0
Mining	2	5	57	50	60	29	50	20	50	100
Petroleum Refining	0	6	67	--	67	17	--	17	25	--
Rubber and Plastics	0	6	50	--	50	17	--	17	33	--
Lumber and Wood Prod.	1	4	60	100	50	20	0	25	33	0
Printing and Publishing	0	5	20	--	20	20	--	20	100	--
AVERAGE			45	56	40	11	11	11	25	20
										28

evaluation factor is .7, showing that a larger percent of companies without staff which researched this topic declared it as having produced most worth-while results than was declared by companies with staff.

Vendor Performance Evaluation

Research on this topic would involve gathering and analyzing data as a basis for decisions on the degree to which vendors had satisfactorily performed their part of the purchase agreement. Such an evaluation might be highly quantitative, as in the evaluation of the quality levels maintained in items received from a vendor. In the evaluation of the performance of a vendor in making his technical personnel available to assist in the solution of problem areas, or in willingness to accept delivery data or specification changes, the techniques might be largely qualitative in nature.

The occurrence factor on the Vendor Performance Evaluation topic, computed from Table 8-11, is 1.8, showing that companies with staff predominated in research on this topic. An average of 74% of those companies with staff researched this topic, compared to 41% of those companies without staff. In all industry classifications but one (Textile Mill and Apparel, in which only one company had staff) the percent of companies with staff which researched this topic was greater than the percent of companies without staff. All of the

Table 8-11. Vendor Performance Evaluation

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
	Total			Total			All Companies Reporting		Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	Total	w/ Staff	w/o Staff	Total
Food and Tobacco	9	37	50%	67%	46%	0%	0%	0%	0%	0%	0%	0%
Transportation Equip.	17	20	59	77	45	14	32	5	23	1	11	11
Chemicals	13	20	61	77	50	9	15	5	15	20	10	10
Machinery, except Electrical	14	16	53	71	38	7	7	6	13	10	17	17
Primary Metals	10	18	39	40	39	4	0	5	9	0	14	14
Electrical Machinery, Equip. and Supplies	9	15	67	100	47	17	22	14	25	22	29	29
Paper	3	13	38	100	23	6	0	8	17	0	33	33
Crude Petroleum and Natural Gas	7	8	53	86	100	13	28	0	25	33	0	0
Fabricated Metal Prod.	5	10	73	100	60	7	0	10	9	0	17	17
Stone, Clay and Glass	4	8	42	50	38	8	0	13	20	0	33	33
Textile Mill Product and Apparel	1	9	50	0	56	10	0	11	20	0	20	20
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg. Mining	4	5	56	75	40	11	25	0	20	33	0	0
Petroleum Refining	2	5	29	50	20	15	50	0	50	100	0	0
Rubber and Plastics	0	6	67	--	67	0	--	0	0	--	0	0
Lumber and Wood Prod.	0	6	0	--	0	0	--	0	0	--	0	0
Printing and Publishing	1	4	40	100	25	0	0	0	0	0	0	0
	0	5	40	--	40	0	--	0	0	--	0	0
AVERAGE			52	74	41	8	13	6	16	18	15	15

companies with staff researched this topic in the following four industries: Electrical Machinery, Equipment, and Supplies; Paper; Fabricated Metal Products; and Lumber and Wood Products. In only one industry, Crude Petroleum and Natural Gas, did all companies without staff indicate research on this topic.

Thirteen percent of the total companies with staff indicated this topic had produced most worth-while results, compared to six percent of companies without staff. Comparison of the percents indicates a benefit factor of 2.2. A higher percent of companies with staff which researched this topic declared that it had produced most worth-while results (18%) than was indicated by companies without staff (15%), producing an evaluation factor of 1.2. In the Transportation Equipment industry, 41% of those companies with staff which researched this topic indicated it had produced most worth-while results.

Vendor Sales Strategy

The ability of the buyer to negotiate the most satisfactory agreement, from his point of view, depends to a large extent on his ability to understand the reasons for actions that a vendor takes, and to anticipate actions by a vendor. Research on this topic would involve study of a vendor's position relative to other vendors and the total market; study of a vendor's long-

and short-run objectives in such aspects as price and market share; and formulation of conclusions on probable actions by a vendor, and the reasons for these actions. While the results of this research might be subject to a large error factor, the more information the buyer has on a vendor's position, objectives, and probable actions, the stronger is the buyer's negotiation position.

Those companies with staff were twice as active in research on the Vendor Sales Strategy topic, as the occurrence factor, computed from Table 8-12, of 2 shows. Twenty-two percent of the total companies with staff researched this topic, compared to 11% of companies without staff. In three industries--Fabricated Metal Products; Chemicals; and Machinery, except Electrical--companies with staff were most active in research on this topic, where 40%, 38%, and 36%, respectively, of the firms researched this topic. Textile Mill Product and Apparel was the industry in which the largest percent of companies without staff did research (22%).

Few companies indicated this topic as producing most worth-while results. In only four industries did any companies, either with or without staff, indicate most worth-while results from this topic. The benefit factor is 3, and the evaluation factor is 1.1, although due to the small number of firms indicating this topic as having produced most worth-while

Table 8-12. Vendor Sales Strategy

Industry Classification	Number Companies Reporting	Percent of Companies Research'ching Topic				Percent Indicating Most Worth-while Results							
						All Companies Reporting				Only Companies Which Researched This Topic			
		w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	
Food and Tobacco	9	37	20%	22%	19%	4%	0%	0%	6%	22%	0%	29%	
Transportation Equip.	17	20	14	24	5	0	0	0	0	0	0	0	
Chemicals	13	20	21	38	10	9	15	5	43	40	50	50	
Machinery, except Electrical	14	16	20	36	6	0	0	0	0	0	0	0	
Primary Metals	10	18	11	0	17	0	0	0	0	0	0	0	
Electrical Machinery, Equip. and Supplies	9	15	21	22	20	0	0	0	0	0	0	0	
Paper	3	13	0	0	0	0	0	0	0	0	0	0	
Crude Petroleum and Natural Gas	7	8	20	29	13	7	15	0	33	50	0	0	
Fabricated Metal Prod.	5	10	27	40	20	0	0	0	0	0	0	0	
Stone, Clay and Glass	4	8	0	0	0	0	0	0	0	0	0	0	
Textile Mill Product and Apparel	1	9	20	0	22	0	0	0	0	0	0	0	
Ordnanace; Leather; Prof. . Scientific, Optical; Misc. Mfg.	4	5	11	0	20	0	0	0	0	0	0	0	
Mining	2	5	0	0	0	0	0	0	0	0	0	0	
Petroleum Refining	0	6	0	--	0	0	--	0	0	--	0	0	
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--	0	0	
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0	0	0	
Printing and Publishing	0	5	0	--	0	0	--	0	0	--	0	0	
AVERAGE			15	22	11	2	3	1	13	14	13	13	

results, these factors may not be too meaningful.

Comparison of Occurrence, Benefit,
Evaluation Factors

Table 8-13 presents the occurrence factor, benefit factor, and evaluation factor for each of the nine vendor research topics. The occurrence factors in this table show that a larger percent of companies with staff researched each of the topics than was done by companies without staff. The occurrence factor was highest for the Estimate of Distribution Costs topic, where 3.1 times as many companies with staff did research.

The benefit factors show also that the percent of companies with staff which declared each of the nine topics produced most worth-while results was as large or larger than that for companies without staff.

On only four topics--Vendor Performance Evaluation, Estimate of Manufacturing Costs, Estimate of Distribution Costs, and Vendor Sales Strategy--was the evaluation factor 1 or greater. Thus, on the majority of the topics, the percent of those companies researching a topic which declared it produced most worth-while results was larger in the companies without staff. The average evaluation factor was less than 1 (.8), which shows that for the entire Research on Vendors category, a higher percent of companies without staff, than

Table 8-13. Occurrence, benefit, and evaluation factors for the nine vendor research topics

Research Topics	Occurrence Factor ^a	Benefit Factor ^b	Evaluation Factor ^c
Analysis of financial capacity	1.8	1 ^d	.3 ^d
Analysis of production facilities	1.8	1.4	.7
Finding potential supply source	1.5	1	.7
Estimate of distribution costs	3.1	5 ^d	3 ^d
Estimate of manufacturing costs	3	3 ^d	1 ^d
Supplier attitude survey	2.3	1 ^d	.6 ^d
Trade relations data	1.4	1	.7
Vendor performance evaluation	1.8	2.2	1.2
Vendor sales strategy	2	3 ^d	1.1 ^d
AVERAGE FACTOR	1.8	1.8	.8

^aRatio of percent of companies with staff to percent of companies without staff which researched each topic.

^bRatio of percent of companies with staff to percent of companies without staff which indicated a topic produced most worth-while results.

^cRatio of percent of companies with staff to percent of companies without staff which declared most worth-while results produced when a topic was actually researched.

^dFactor may not be too meaningful, due to the small number of companies which indicated this topic produced most worth-while results.

with staff, declared these topics produced most worth-while results when actually researched. As stated earlier, since only a small number of companies indicated most worth-while results produced from topics in this category, the evaluation factor may not be too meaningful.

Evaluation of Research Performed
by the Purchase Research Staff

That research done by the purchase research staff on topics in the Research on Vendors category was more highly regarded than that done by other individuals within the purchasing department. Seventeen percent of the total topics in this category which were researched solely by the purchase research staff were declared to have produced most worth-while results (Table 8-14). This percent is 1.6 times as large as the percent of total topics researched solely by the buyer and found to have produced most worth-while results (11%), and 1.1 times greater than the percent of topics researched solely by the administrator and found to have produced most worth-while results (15%).

The percent of topics researched solely by the purchase research staff and found to have produced most worth-while results was as large or larger than the percent for research done solely by the buyer and solely by the administrator in all but the following three topics: Estimate of Manufacturing

Table 8-14. Research which produced most worth-while results when done by staff, buyer, or administrator alone, in companies with purchase research staff

Research Topics	Number Companies Researching			Percent of Cos. Researching Indicating Most Worth-while Results Produced		
	Staff Alone	Buyer Alone	Administrator Alone	Staff Alone	Buyer Alone	Administrator Alone
Analysis of Financial Capacity	9	20	21	0%	0%	0%
Analysis of Production Facilities	9	36	11	33	6	0
Finding Potential Supply Source	4	34	5	50	15	20
Estimate of Distribution Costs	9	7	5	11	0	0
Estimate of Manufacturing Costs	18	10	11	6	20	9
Supplier Attitude Survey	9	7	13	22	0	8
Trade Relations Data	15	2	27	20	50	26
Vendor Performance Evaluation	6	26	12	17	19	58
Vendor Sales Strategy	3	7	9	33	29	0
Average				17%	11%	15%

Costs, Trade Relations Data, and Vendor Performance Evaluation.

These data from Table 8-14 provide one indication of the effectiveness of research on Vendors done by a purchase research staff, and from this it can be concluded that, on the average, a company probably would produce more worth-while results from research on Vendors when it does this work with staff personnel.

Personnel Involvement

1. The Purchase Research Staff

In companies which had a purchase research staff, that staff alone performed the research on 16% of the topics in the Vendors category, and was involved in research on 37% of the topics, which were researched.

Table 8-15 shows, by company size, the percent of topics researched by companies with staff in which the purchase research staff was involved. It also shows, only for the total 99 companies, the percent of topics researched in which this research was done solely by the research staff. The two topics which stand out as ones in which firms relied heavily on their research staff are Estimate of Manufacturing Costs and Estimate of Distribution Costs, in which 35% and 32%, respectively, of the firms which researched those topics did the research solely with their research staff.

Table 8-15. Involvement of purchase research staff in research on vendors, by company size

Company Size (Sales)	Percent of Those Cos. Researching Each Topic in Which Their Purchase Research Staff Was Involved ^a					Percent in Which Only PR Staff Involved
	Under \$100 Million	\$100-499 Million	\$500-999 Million	\$1,000 Mil. and Over	Total	All Companies
Number of Companies with Staff	8	59	14	18	99	99
<u>Research Topics</u>						
Analysis of Financial Capacity	17%	37%	33%	36%	35%	12%
Analysis of Prod. Facilities	17	34	42	25	32	11
Finding Potential Supply Source	14	39	54	33	38	5
Estimate of Distribution Costs	50	44	60	80	54	32
Estimate of Manufacturing Costs	25	55	83	67	59	35
Supplier Attitude Survey	0	41	0	43	34	26
Trade Relations Data	0	26	78	50	38	27
Vendor Performance Evaluation	0	31	50	27	30	8
Vendor Sales Strategy	0	17	100	17	23	14
Average involvement for the above topics	13	36	54	39	37	16

^a Computation of percent of total purchase research staff involvement made by (1) adding the number of topics researched by the purchase research staff alone and in combination with the buyer and/or the administrator, and (2) dividing this number by the number of companies which indicated the topic was researched.

The average total involvement of the staff in all nine topics, for the total 99 companies with staff, was 37%. On only two of the nine topics was the research staff involved in over 50% of that research done: Estimate of Manufacturing Costs, and Estimate of Distribution Costs, where the staff was involved in 59% and 54%, respectively, of the research done. On only one topic, Vendor Sales Strategy, was the staff involved in less than 30% of the research done (23% total involvement).

The average total involvement of the research staff in all nine topics did not appear to be related to company size (measured by dollar sales), although there was a substantial difference between average total involvement in the smallest size category and that in the other three categories. In the smallest size category, the staff was involved in only 13% of the topics researched, but in the other three categories the staff was involved in a substantially greater percent of the topics researched (36% of topics researched by companies with sales of \$100-499 million, 54% of topics in the \$500-999 million category, and 39% of topics researched by companies in the over \$1,000 million category).

In those companies with staff, the staff alone researched an average of only .8 topics in the entire Research on Vendors category, and was involved (indicated as doing the research

alone, as well as with other individuals) in an average of two topics in this category.

2. The Administrator

The administrator was involved in a smaller percentage of those total topics researched in companies which had a research staff.

The administrator alone did the research on 22% of those total topics researched in companies with staff, compared to 32% of those total topics researched by companies without staff. On each of the nine topics in this category the administrator alone performed a greater percent of the research actually done in those companies without a research staff (Table 8-16).

Total administrator involvement (topics researched by the administrator alone, as well as topics researched by the administrator plus others within the department) in the total topics actually researched also was greater in those companies without staff, for the administrator was involved in 49% of those topics researched in companies without staff, but in only 38% of the topics researched in companies with staff. However, on three topics--Finding Potential Supply Source, Estimate of Distribution Costs, and Estimate of Manufacturing Costs--the percent involvement of the administrator was higher in companies with staff than without staff.

Table 8-16. Administrator involvement in purchase research on vendors in companies researching each topic

Percent of those companies <u>researching</u> each topic in which administrator was involved ^a				
Research Topics	Companies with Staff			Companies without Staff
	Administrator Alone	Administrator; Adm. & Buyer; Adm. & PR; Adm., PR & Buyer	Administrator Alone	Administrator and Buyer
Analysis of financial capacity	27%	35%	37%	51%
Analysis of production facilities	13	32	26	46
Finding potential supply source	6	43	13	34
Estimate of distribution costs	18	54	26	31
Estimate of manufacturing costs	21	59	22	33
Supplier attitude survey	37	34	45	65
Trade relations data	48	38	67	79
Vendor performance evaluation	16	31	21	42
Vendor sales strategy	41	23	43	65
Average involvement for the above topics	22	38	32	49

^a Percent is not a percent of the 99 or 205 companies. It is a percent of those companies which indicated they did research in each area. For example, Analysis of Financial Capacity was researched by 77 companies with staff.

The average number of topics in the Research on Vendors category in which the administrator alone, and in total, was involved, was larger in those companies with staff. The administrator alone did research on an average of 1.2 topics in companies with staff, compared to .9 topics in companies without staff (Table 8-17). The administrator was involved (did research alone, and with others in the department) in an average of 2 topics in companies with staff, but only 1.4 topics in companies without staff. Thus, the administrator alone researched 1.3 times as many topics in companies with staff, and was involved in research on 1.4 times as many topics, as in companies without staff. However, since companies with staff researched 1.8 times as many topics in the Vendors category as companies without staff, the increase in the number of topics in which the administrator alone did the research, or was involved in the research, was not as great.

From the above data it can be concluded that in companies with staff, the administrator is less likely to be involved in that research actually done on Vendors topics, for specialized staff is available to perform some of the research. The administrator in companies with staff, however, is involved in a larger number of research topics, because companies with staff research a larger number of topics. The increase in the average number of topics in which the administrator is involved, however, is not as great as the increase in total topics researched, due

Table 8-17. Administrator involvement in research on vendors

Percent of Companies in Which Administrator Was Involved in Research ^a				
Research Topics	99 Companies w/Staff		205 Companies w/o Staff	
	Administrator Alone	Administrator; Adm. & Buyer; Adm. & PR; Adm., Buyer & PR	Administrator Alone	Administrator and Buyer
Analysis of Financial Capacity	21%	27%	16%	22%
Analysis of Production Facilities	11	27	12	22
Finding Potential Supply Source	5	36	7	19
Estimate of Distribution Costs	5	15	2	3
Estimate of Manufacturing Costs	11	30	4	6
Supplier Attitude Survey	13	12	7	10
Trade Relations Data	27	21	27	32
Vendor Performance Evaluation	12	23	9	18
Vendor Sales Strategy	9	5	5	7
Average percent	13%	22%	10%	15%
Average number of topics	1.2	2	.9	1.4

^aPercentage was calculated on the total number of companies in each group and not on only those which researched each topic.

to the assistance of the research staff.

3. The Buyer

The buyer was involved in a higher percentage of topics actually researched in companies without a research staff, compared to those with a research staff.

The buyer alone did the research on 51% of the topics researched in companies without staff, but on only 29% of the topics researched by companies which had a research staff. Total buyer involvement (topics on which the buyer alone, plus with other individuals in the purchasing department, did research) in topics researched showed the buyer involved in 68% of the research done in companies without staff, and only 59% of the topics researched in companies with staff (Table 8-18).

On all nine topics, the buyer alone was involved in a larger percent of the work done in companies without staff. Total buyer involvement in research done also was greater in companies without staff on all but two of the nine topics: Analysis of Financial Capacity and Analysis of Production Facilities. In these two topics, the percent of total buyer involvement in that research done was approximately the same for both companies with, and without, staff. Thus, it would appear that the addition of a purchase research staff does reduce the involvement of the buyer in that research actually done.

Table 8-18. Buyer involvement in purchase research on vendors in companies researching each topic

Research Topics	Percent of Those Companies <u>Researching</u> Each Topic in Which Buyer Was Involved ^a			
	Buyer Alone	Buyer; Buyer & PR; Buyer & Adm.; Buyer, Adm. & PR	Buyer Alone	Buyer; Buyer and Administrator
Analysis of Financial Capacity	26%	65%	49%	63%
Analysis of Production Facilities	43	75	54	74
Finding Potential Supply Source	40	86	66	87
Estimate of Manufacturing Costs	20	37	67	78
Estimate of Distribution Costs	25	46	68	74
Supplier Attitude Survey	20	37	67	78
Trade Relations Data	4	18	21	33
Vendor Performance Evaluation	35	70	58	79
Vendor Sales Strategy	32	41	35	57
Average involvement for the above topics	29	59	51	68

^aPercent is not a percent of the 99 or 205 companies. It is a percent of those companies which indicated they did research in each area. For example, Analysis of Financial Capacity was researched by 77 companies with staff.

On the other hand, the buyer in companies with a purchase research staff was involved in a larger average number of research topics than in companies without a research staff. The buyer alone was involved in an average of 1.5 topics in the Research on Vendors category in companies with staff, but only 1.4 topics in companies without a staff. The buyer in total (buyer alone, and with others) was involved in an average of 3 topics in this category in companies with staff, but only 1.9 topics in companies which did not have a research staff (Table 8-19). Thus, although the buyer alone was involved in 1.1 times as many topics in companies with staff, and in total he was involved in 1.6 times as many topics in companies with staff, these increases were not as great as the 1.8 increase in topics researched. Also, these figures indicate that the introduction of a research staff appears greatly to increase the average number of topics researched by the buyer, together with the administrator and/or the research staff, although it does not appreciably change the average number of topics on which the buyer alone does research.

From the above data, the following conclusion follows:
While the buyer is involved in a smaller percent of the total research actually done on Research on Vendors topics in companies which have a research staff, because so many more topics are researched by companies with staff, the buyer actually gets

Table 8-19. Buyer involvement in research on vendors

Research Topics	Percent of Companies in Which Buyer Was Involved in Research ^a			
	Companies w/Staff		Companies w/o Staff	
	Buyer Alone	Buyer; Buyer & PR; Buyer & Adm.; Buyer, Adm. & PR	Buyer Alone	Buyer; Buyer and Administrator
Analysis of Financial Capacity	20%	50%	21%	28%
Analysis of Production Facilities	36	63	25	35
Finding Potential Supply Source	34	72	37	49
Estimate of Distribution Costs	7	13	6	6
Estimate of Manufacturing Costs	10	19	12	14
Supplier Attitude Survey	7	13	5	8
Trade Relations Data	2	10	8	13
Vendor Performance Evaluation	26	52	24	34
Vendor Sales Strategy	7	9	4	6
Average percent	17%	34%	16%	21%
Average number of topics	1.5	3	1.4	1.9

^a Percentage was calculated on the total number of companies in each group and not on only those which researched each topic.

involved in a larger number of research topics when a research staff is present. The increase in the number of topics in which the buyer is involved in companies with staff, however, is not as large as the increase in topics researched, for the research staff is available to assume a part of this additional research work.

Chapter Summary

Conclusions regarding purchasing research on Vendors were made by a comparison of the 99 companies with a purchase research staff and the 205 companies without staff which responded to the mail questionnaire.

Companies with a purchase research staff researched, on an average, 1.8 times as many topics in the Vendors category as those companies without staff. Each of the nine topics in this category was researched by a higher percent of companies with staff.

Companies with a research staff declared 1.8 times as many topics in the Vendors category produced most worth-while results as were declared by companies without staff. Of those total topics actually researched, a higher percent of companies without staff declared most worth-while results produced, although this did not hold true for all nine individual topics.

There did not appear to be any relation between the number of topics researched and company size in either of the two groups of companies.

Companies with staff researched more topics in all but one industry classification. The five industries with the largest percent of companies with staff which researched topics in this category were as follows: Chemicals (69%); Fabricated Metal Products (69%); Electrical Machinery, Equipment, and Supplies (67%); Transportation Equipment (59%); and Crude Petroleum and Natural Gas (59%).

An analysis was made in this chapter of each of the following nine individual topics in this category: Analysis of Financial Capacity, Analysis of Production Facilities, Finding Potential Supply Source, Estimate of Distribution Costs, Estimate of Manufacturing Costs, Supplier Attitude Survey, Trade Relations Data, Vendor Performance Evaluation, and Vendor Sales Strategy. Each topic was described, and, when possible an example was given of research done on each topic in one of the ten companies interviewed. Additionally, a table was presented for each topic to show, by industry classification, the percent of companies which researched the topic, and declared most worth-while results from the topic.

Topics researched by the purchase research staff alone were regarded as having produced most worth-while results 1.6 times as frequently as topics researched by the buyer alone, and 1.1 times as frequently as topics researched by the administrator alone.

The purchase research staff alone did the research on 16% of those topics researched in companies with staff, and was involved (either doing the research alone, or along with others in the department) in 37% of the topics researched. The average number of topics researched by the staff alone was .8; the average number of topics in which the staff was involved was 2.

The administrator alone, and in total, was involved in a smaller percent of that research actually done in companies with staff than in companies without staff. However, the administrator alone, and in total, was involved in a larger average number of topics in those companies with staff. The administrator alone researched 1.2 topics in companies with staff and .9 topics in companies without staff. In total, in companies with staff he was involved in research on an average of 2 topics, compared to 1.4 topics in companies without staff.

The buyer alone, and in total, also was involved in a smaller percent of topics actually researched in companies with staff, compared to those companies without staff. However, the buyer alone, and in total, was involved in research on a larger average number of topics in those companies with a research staff. The buyer alone researched 1.5 topics in companies with staff but only 1.4 topics in companies without staff. In total the buyer in companies with staff was involved in an average of 3 topics, compared to 1.9 topics in companies without staff.

The increase in number of topics researched by both the administrator and the buyer, however, was not as large as the increase in number of topics researched in companies with staff.

CHAPTER IX

RESEARCH ON THE PURCHASING SYSTEM

Introduction

The third, and last, major category of purchasing research studied includes all topics directed at analyzing the system used to facilitate performance of the purchasing function, and through this analysis to suggest means by which the over-all efficiency of the purchasing system might be improved. Much of the research in this category falls under the general heading of methods and procedures analysis. In some concerns, the services of a separate systems and procedures department might be available for research of this type; however, in many companies this research might be a responsibility of the purchasing department.

This chapter discusses research done, the evaluation of results of the research, and the involvement of the purchase research staff, the administrator, and the buyer in research on the Purchasing System category. Each of the eleven individual research topics in this category also is discussed, and the occurrence, benefit, and evaluation factors are computed for each of these topics. This chapter presents the same type of analysis as did Chapter VIII, Research on Vendors, and Chapter VII, Research on Purchased Materials, Products, or

Services. Therefore, the remarks in the introduction of Chapter VII concerning the methods by which the data were obtained, and limitations of the data, are equally applicable to this chapter also.

Topics Researched

Those companies with a purchase research staff researched 1.9 times as many topics in the Purchasing System category as those companies without staff. The companies with a research staff indicated they had done research, during 1959 or 1960, on an average of 67% of the topics in this category, while those companies without staff had researched only 36% of these topics (Table 9-1). On all eleven individual topics in this general category, the percent of companies with staff which indicated research had been done was greater than the percent for companies without staff. The seven topics which had a higher occurrence factor¹ than the 1.9 average occurrence factor for the Research on the Purchasing System category were (figure in brackets is the occurrence factor): Learning Curve (3), Formulation of Price Index (2.7), Method for Evaluating Buyer Performance (2.3), Data Processing Equipment (2), Payment or Cash Discount (2), Method for Evaluating Purchasing Depart-

¹The occurrence factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which researched a topic.

Table 9-1. Companies researching purchasing system topics; percent indicating most worth-while results

Research Topics	Percent of Companies Researching Topic				Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff		Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Blanket Orders	67%	83%	59%		21%	21%	20%	31%	25%	34%
Data Processing Equipment	50	76	38		9	17	5	18	22	13
Forms Design	59	80	48		8	9	8	14	11	16
Formulation of Price Index	26	45	17		2	6	1	9	13	3
Inventory Control	55	68	48		17	19	15	30	28	32
Learning Curve	13	24	8		2	5	0	12	21	0
Payment or Cash Discount	40	59	30		5	4	5	12	7	16
Small or Rush Orders	50	71	40		9	13	7	18	18	17
Method for Evaluating:										
Buyer Performance	46	75	33		6	10	3	12	13	10
Purchasing Department Performance	52	75	38		8	10	6	15	13	17
Supplier Performance	43	64	33		4	7	2	9	11	7
AVERAGE	46%	67%	36%		8%	11%	7%	18%	18%	19%

ment Performance (2), and Method for Evaluating Supplier Performance (2). The two topics with the smallest occurrence factor were Blanket Orders and Inventory Control, both of which had an occurrence factor of 1.4.

From the above information on the occurrence factors for topics in this category, and a comparison of the percent of companies with and without staff which researched each of the eleven topics (Table 9-1), the following conclusion is indicated: Those companies with a purchase research staff probably would research approximately twice as many topics in the Purchasing System category as would be done by companies which do not have such a staff.

There was a substantial difference in the percent of companies researching the individual topics, both in the group with staff and in the group without staff, as Table 9-1 shows. The topic researched by the largest percent of companies in both groups was Blanket Orders, which was researched by 83% of the companies with staff, and by 59% of the companies without staff. The Learning Curve topic was researched by the smallest percent of companies, both with and without staff, for only 24% of those with staff, and 8% of those without staff, did research on this topic.

The relative rank of the percentages of companies with staff, and those without staff, which researched the eleven topics in this category, was essentially the same, except

for the Inventory Control topic. This topic ranked second in companies without staff, but only sixth in rank of companies with staff.

Topics Produced Most Worth-while Results

Those companies with a purchase research staff declared 1.6 times as many topics in the Purchasing System category as having produced most worth-while results as did companies without a research staff. The average percent of topics declared as having produced most worth-while results was small in both groups of companies. Eleven percent of the topics were declared by companies with staff as having produced most worth-while results; seven percent by companies without staff (Table 9-1).

On all but one of the eleven topics in this category, the percent of companies with staff which declared the topic produced most worth-while results was larger than the percent for companies without staff. Only on the Payment or Cash Discount topic did a larger percent of companies without staff indicate most worth-while results produced than was indicated by companies with staff. The four topics with the highest benefit factor² are Learning Curve (five percent of companies with staff researched zero percent of companies without staff), Method for Evaluating Supplier Performance (3.5), Data Processing Equipment (3.4), and Method for Evaluating Buyer Performance (3.3).

²The benefit factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which indicated a topic produced most worth-while results

From the above information on the benefit factors, and from the data presented in Table 9-1, the following conclusion is indicated: Companies with a purchase research staff are more likely to produce most worth-while results in research on topics in the Purchasing System category than companies which do not have a research staff.

The average evaluation factor,³ computed from Table 9-1, is slightly less than 1, which shows that approximately the same percent of companies with, and without, staff indicated most worth-while results from topics actually researched. On the following six topics the evaluation factor was greater than 1: Data Processing Equipment, Formulation of Price Index, Learning Curve, Small or Rush Orders, Method for Evaluating Purchasing Department Performance, and Method for Evaluating Supplier Performance. The evaluation factors for each topic are discussed later in this chapter, and summarized in Table 9-15.

Relation Between Company Size and Research Done

Company size appeared to only slightly affect the number of topics researched in companies with staff, and to have no effect on the number of topics researched in companies without staff.

³The evaluation factor, discussed in Chapter IV, is the ratio of the percent of companies with staff to the percent of companies without staff which declared most worth-while results produced when a topic was actually researched.

Table 9-2 shows that the average percent of topics researched by companies with staff increased from 61% in the smallest size category (measured by net sales) to 70% in the next larger size category, and was 68% in the two largest size categories. In the companies without staff there was a decrease in percent of topics researched between the smallest and largest size category. On the following five topics the percent of companies with staff which did research increased with increased company size, although the increase was not necessarily constant between all four size categories: Data Processing Equipment, Formulation of Price Index, Learning Curve, Method for Evaluating Buyer Performance, and Method for Evaluating Supplier Performance.

Relation Between Industry Classification and Research Done

Companies with staff did research on more topics in the Purchasing System category than companies without staff, in all industry classifications. In all but two of the fourteen industry classifications in which some companies had a research staff, those companies with staff did research on an average of over 50% of the topics in this category. In only one industry classification, Textile Mill Product and Apparel, did companies without staff research as many as 50% of the topics in this category (Table 9-3).

In the following five industry classifications the average

Table 9-2. Companies researching purchasing system topics, by company size

Company Size (1959 Sales, Million Dollars)									
Under 100		100-499		500-999		1,000 and Over			
w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Number of Respondents	8	52	59	121	14	21	18	11	
<u>Research Topics</u>									
Blanket Orders	75%	62%	93%	59%	100%	52%	44%	55%	
Data Processing Equipment	63	33	75	38	80	52	89	27	
Forms Design	100	44	78	50	80	48	83	64	
Formulation of Price Index	38	17	42	15	43	33	61	0	
Inventory Control	50	56	73	48	80	33	56	55	
Learning Curve	0	10	25	7	21	14	33	9	
Payment or Cash Discount	63	38	60	26	50	24	67	45	
Small or Rush Orders	75	42	68	37	80	48	78	45	
Method for Evaluating:									
Buyer Performance	63	33	78	34	71	33	78	18	
Purchasing Department Performance	88	37	80	39	80	18	3	18	
Supplier Performance	50	29	64	33	57	43	78	27	
Average Percent	61%	37%	70%	35%	68%	39%	68%	33%	

Table 9-3. Companies researching the purchasing system by standard industrial classification

Industry Group	Number of Companies		Percent Researching	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	9	37	69%	36%
Transportation Equipment	17	20	64	27
Chemicals	13	20	71	37
Machinery, except Electrical	14	16	65	40
Primary Metals	10	18	54	46
Electrical Machinery, Equipment and Supplies	9	15	78	33
Paper	3	13	39	24
Crude Petroleum and Natural Gas	7	8	71	30
Fabricated Metal Products	5	10	78	48
Stone, Clay, and Glass	4	8	68	36
Textile Mill Product and Apparel	1	9	64	55
Ordinance; Leather; Professional, Scientific, Optical; Misc. Mfg.	4	5	73	38
Mining	2	5	55	29
Petroleum Refining	0	6	--	33
Rubber and Plastics	0	6	--	11
Lumber and Wood	1	4	36	30
Printing and Publishing	0	5	--	36
AVERAGE			67%	36%

percent of topics researched by companies with staff was particularly large (average percent of total topics researched is in brackets): Fabricated Metal Products (78%); Electrical Machinery, Equipment and Supplies (78%); Ordnance; Leather; Professional, Scientific, Optical Equipment; and Miscellaneous Manufacturing (73%); Chemicals (71%); and Crude Petroleum and Natural Gas (71%). Appendix 2 presents, by industry, the percent of companies with, and without, staff which researched each topic, the percent which declared each topic produced most worth-while results, and the percent of those researching which declared that research produced most worth-while results.

In the following sections, each of the eleven Purchasing System research topics is discussed. Where possible, an example is given of research conducted on each of the topics by one of the ten companies which were interviewed. Following the discussion, a table is presented for each topic to show, by industry classification, the percent of companies which researched the topic, declared the topic produced most worth-while results, and declared the topic produced most worth-while results when researched. The occurrence, benefit, and evaluation factors are computed for each of the tables, and are summarized for all eleven topics in Table 9-15.

Blanket Orders

Research on this topic would be directed at determining the

feasibility of the issuance of purchase orders for particular commodities on a longer than immediate-need basis, with "purchase releases" issued as the need for specific quantities became apparent. Agreements would be negotiated with a particular vendor or vendors on a long-term (perhaps one year or longer) basis, and the "purchase release" would be primarily a clerical procedure used to schedule shipments. Such blanket orders might take the form of "National Contracts" negotiated from a central purchasing office. Various geographically decentralized plants could then "release" against these contracts as their requirements for specific quantities became known. Research on the Blanket Orders topic would attempt to determine which commodities would offer such procurement savings, and the mechanics of the necessary paper flow.

In one of the companies interviewed, a comprehensive study was made by the Purchase Analyst on the feasibility and usefulness of purchasing with blanket orders. The objective was to develop a standard procedure indicating the type items for which this procedure could be used, how it would be used, and the paper flow required. The result of this study was the establishment of a blanket order procedure, which was included as part of the company's purchasing manual.

Table 9-4 presents information, by industry classification, on the percent of companies with, and without, staff which did

Table 9-4. Blanket Orders

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Food and Tobacco	9	37	67%	89%	62%	15%	15%	0%	19%	23%	0%	30%
Transportation Equip.	17	20	62	88	40	11	11	24	0	17	27	0
Chemicals	13	20	70	92	55	27	27	30	25	39	33	45
Machinery, except Electrical	14	16	67	64	69	34	34	21	44	50	33	64
Primary Metals	10	18	79	90	72	21	21	20	32	27	22	44
Electrical Machinery, Equip. and Supplies	9	15	67	89	53	17	17	12	20	25	13	38
Paper	3	13	38	33	38	6	6	0	8	17	0	20
Crude Petroleum and Natural Gas	7	8	73	86	63	26	26	43	13	36	50	20
Fabricated Metal Prod.	5	10	80	100	70	4	4	20	54	50	20	77
Stone, Clay and Glass	4	8	83	100	75	17	17	0	25	20	0	33
Textile Mill Product and Apparel	1	9	90	100	89	10	10	0	12	11	0	13
Ordinance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	75	60	34	34	75	0	50	100	0
Mining	2	5	71	100	60	14	14	0	20	20	0	33
Petroleum Refining	0	6	67	--	67	0	0	--	0	0	--	0
Rubber and Plastics	0	6	17	--	17	17	17	--	17	100	--	100
Lumber and Wood Prod.	1	4	40	0	50	0	0	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	0	0	--	0	0	--	0
AVERAGE			67	83	59	21	21	21	20	31	25	34

research on Blanket Orders and which declared the results of research on this topic as most worth-while. An average of 83% of those companies with a purchase research staff researched this topic; 59% of companies without staff researched this topic. Comparison of these percents indicates an occurrence factor of 1.4, showing that, on an average, 1.4 times as many companies with staff researched this topic as did companies without staff. In five industries, over 90% of companies with staff researched this topic, a higher percentage than for companies without staff in any of the seventeen industry classifications.

The average benefit factor (computed from Table 9-4) is 1.1, which shows that a slightly higher percent of companies with staff found this topic produced most worth-while results. In two industry groups--Ordnance; Leather; Professional, Scientific, and Optical; Miscellaneous Manufacturing; and Crude Petroleum and Natural Gas--the percent of companies with staff which indicated most worth-while results from this topic was relatively high (75% and 43%, respectively). Fabricated Metal Products was the industry in which the largest percent of companies without staff indicated this topic produced most worth-while results (54%).

The average evaluation factor is .7, showing that of those companies which actually researched this topic, a higher percent of companies without staff found it produced most worth-while

results than was found by companies with staff.

Data Processing Equipment

With the introduction of various types of electronic and automated office equipment for record keeping and data processing applications, research might be conducted on various office routines to determine how such mechanical equipment could best be adapted to purchasing data. Frequently, significant advantages in processing inventory data may be achieved through use of such equipment, and possibilities may also exist for automating all, or parts, of the paper work required within a purchasing operation. In some instances the purchase order itself, plus many accompanying documents, might be produced mechanically, based on data introduced into the data processing equipment through punched cards or punched tapes. Informed decisions on the feasibility of such data processing applications to purchasing operations can be made only by considering the total data processing flow within a concern, for modifications in procedures used within the purchasing department will probably affect data needs in other departments, such as receiving and accounting.

In one of the companies interviewed, the purchase research personnel were engaged in a study directed at determining the most economical use of data processing equipment within the purchasing function. As a result of this study, certain of

the necessary purchasing and inventory data were collected and tabulated on the company's electronic computer, and required reports were mechanically prepared by the computer. The feeling of personnel in this company was that although some data processing applications were already being made, much work still was necessary before the full potential of this equipment could be exploited.

The occurrence factor, computed from Table 9-5, on the Data Processing Equipment topic is 2. Seventy-six percent of those companies with staff did research on this topic, compared to 38% of companies without staff. In all 14 industries in which some companies had a purchase research staff, a larger percent of those companies which had staff researched this topic than was done by companies without staff. In the Electrical Machinery, Equipment and Supplies industry, all nine of the companies with staff researched this topic.

The average benefit factor for this topic is 3.4, showing that companies with staff regarded this topic as having produced most worth-while results more frequently than those without staff. The Crude Petroleum and Natural Gas industry had the highest percent of companies which considered this topic produced most worth-while results (43%); Mining had the highest percent for companies without staff (20%).

Table 9-5. Data Processing Equipment

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
	Reporting		Researching Topic		All Companies Reporting		Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	Total	w/ Staff	Total	w/ Staff	Total	w/o Staff
Food and Tobacco	9	37	43%	78%	35%	0%	0%	0%	0%	0%
Transportation Equip.	17	20	49	76	25	22	44	46	40	40
Chemicals	13	20	64	85	50	12	19	18	20	20
Machinery, except Electrical	14	16	57	71	44	14	24	20	29	29
Primary Metals	10	18	57	60	56	7	13	17	10	10
Electrical Machinery, Equip. and Supplies	9	15	58	100	33	12	21	22	20	20
Paper	3	13	25	33	23	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	53	86	25	20	38	50	0	0
Fabricated Metal Prod.	5	10	60	80	50	7	11	0	20	20
Stone, Clay and Glass	4	8	42	75	25	0	0	0	0	0
Textile Mill Product and Apparel	1	9	60	100	56	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	75	60	11	17	33	0	0
Mining	2	5	29	50	20	15	50	0	100	100
Petroleum Refining	0	6	0	--	0	0	0	--	0	0
Rubber and Plastics	0	6	50	--	50	0	0	--	0	0
Lumber and Wood Prod.	1	4	60	100	50	0	0	0	0	0
Printing and Publishing	0	5	20	--	20	0	0	--	0	0
AVERAGE			50	76	38	9	18	22	13	13

When companies researched this topic, a larger percentage of those with staff considered this research produced most worth-while results, as the evaluation factor of 1.7 shows. Twenty two percent of companies with staff which researched this topic found it produced most worth-while results, compared to only 13% of companies without staff.

Forms Design

This research would be directed at determining the forms which should be used for transmission of various purchasing and materials data to those parties which need such information.

In one company interviewed, the traveling requisition form was subjected to study, partly to ascertain the limitations to the use of this form and partly to determine whether the form was properly designed to furnish all the information required, and to minimize the time necessary to enter the required information on the form. Based on this study by the Purchase Analyst, the traveling requisition form was modified, and the use of this document was extended into several other of the company's divisions.

Table 9-6 shows that 80% of those companies with staff researched the Forms Design topic, compared to 48% of those companies without staff. The occurrence factor is 1.7 for this topic. In all industry groups (with the exception of Mining) which had staff, a larger percent of companies with staff researched

Table 9-6. Forms Design

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	57%	67%	54%	5%	0%	5%	8%	0%
Transportation Equip.	17	20	57	76	40	6	11	0	10	15
Chemicals	13	20	61	77	50	15	8	20	25	10
Machinery, except Electrical	14	16	73	93	56	7	0	12	10	0
Primary Metals	10	18	61	70	56	7	0	11	12	0
Electrical Machinery, Equip. and Supplies	9	15	46	89	20	8	12	7	18	13
Paper	3	13	44	67	38	13	34	8	29	50
Crude Petroleum and Natural Gas	7	8	73	86	63	13	15	13	18	17
Fabricated Metal Prod.	5	10	67	100	50	0	0	0	0	0
Stone, Clay and Glass	4	8	67	100	50	25	25	25	38	25
Textile Mill Product and Apparel	1	9	70	100	67	10	100	0	14	100
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	56	75	40	11	25	0	20	33
Mining	2	5	57	50	60	0	0	0	0	0
Petroleum Refining	0	6	67	--	67	0	--	0	0	--
Rubber and Plastics	0	6	17	--	17	0	--	0	0	--
Lumber and Wood Prod.	1	4	60	100	50	20	0	25	33	0
Printing and Publishing	0	5	60	--	60	0	--	0	0	--
AVERAGE			59	80	48	8	9	8	14	11
										16

this topic than was done by companies without staff. In four industries, all companies with staff researched Forms Design.

The average benefit factor is 1.1, showing that companies with staff regarded the results of this topic slightly higher than companies without staff. Nine percent of companies with staff declared it had produced most worth-while results; 8% of companies without staff said it had produced most worth-while results. The average evaluation factor is .7, which shows that when this topic was researched, a larger number of companies without staff found it had produced most worth-while results.

Formulation of Price Index

A weighted index of prices of purchased commodities often can be devised which will be useful as a measure of the direction and magnitude of price variation. In preparing such an index, decisions must be made on which prices should be included in the make-up of the index, what relative weight should be assigned various prices, and the sources which may be used to obtain necessary prices. Not only must the index be initially formulated, but it should also be revised at frequent intervals, as sources of price data change, and as changes in the relative importance of commodities in the purchase pattern require revision of their weight in the index.

In one company interviewed, the Purchase Analyst had formulated an index of market prices, weighted according to the relative importance of various purchased materials which made up the total purchasing dollar spent. This index showed the direction and magnitude of changes in market prices for the principal items which the company purchased. Separate market price indices also were formulated for each of the company's product divisions. These indices were revised periodically, as the price weightings required adjustment. Additionally, Purchase Research had formulated an index of delivered cost of purchased materials. This cost index was compared with the appropriate market price index as a basis for judging in the aggregate: (1) how well the company was purchasing, and (2) the impact of the purchasing cost reduction program.

Those companies with a purchase research staff did approximately two and a half times as much research on the Formulation of Price Index topic as was done by those companies without staff. Table 9-7 shows that 45% of the companies with staff researched this topic, compared to 17% of those companies without staff, which indicates an occurrence factor of 2.6. The Chemicals industry had the highest percent of companies with staff which researched this topic (62%); Lumber and Wood Products was the industry in which the largest percent of companies without staff indicated research done on this topic (50%).

Table 9-7. Formulation of Price Index

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting		Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	24%	56%	16%	2%	0%	3%	9%	0%
Transportation Equip.	17	20	19	35	5	0	0	0	0	0
Chemicals	13	20	36	62	20	9	24	0	25	38
Machinery, except Electrical	14	16	33	50	19	3	7	0	10	14
Primary Metals	10	18	29	40	22	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15	21	56	0	4	11	0	20	20
Paper	3	13	0	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	40	57	25	0	0	0	0	0
Fabricated Metal Prod.	5	10	27	40	20	0	0	0	0	0
Stone, Clay and Glass	4	8	33	50	25	0	0	0	0	0
Textile Mill Product and Apparel	1	9	40	0	44	0	0	0	0	0
Ordinance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	33	50	20	11	25	0	33	50
Mining	2	5	14	0	20	0	0	0	0	0
Petroleum Refining	0	6	17	--	17	0	--	0	0	--
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--
Lumber and Wood Prod.	1	4	40	0	50	0	0	0	0	0
Printing and Publishing	0	5	20	--	20	0	--	0	0	--
AVERAGE			26	45	17	2	6	1	9	13
										3

Relatively few firms indicated this topic produced most worth-while results: 6% of firms with staff, and only 1% of firms without staff, producing a benefit factor of 6. The evaluation factor is 4.3. However, due to the small number of firms in each group which declared this topic produced most worth-while results, the benefit and evaluation factors may not be too meaningful.

Inventory Control

In many companies the purchasing executive may be responsible for inventory control of purchased products and materials. In such cases, research might be done on establishment of the system used in recording quantity and valuation of inventory, determining appropriate inventory levels and safety stocks, initiating purchase action to replenish inventories, and calculating appropriate lead times for items in inventory. Frequently, this research might result in the establishment of mathematical rules useful in arriving at inventory decisions.

Table 9-8 shows that an average of 68% of those companies with staff researched the Inventory Control topic, compared to 48% of those firms without a purchase research staff, or an occurrence factor of 1.4. In all industries but one, (Machinery, except Electrical), a larger percent of those companies with staff researched this topic than companies without

staff. In four industries, 100% of those companies with staff researched this topic.

The benefit factor, computed from Table 9-8, is 1.3, showing that companies with staff found this topic produced most worth-while results more frequently than companies without staff. The evaluation factor is .9, showing that when this topic was researched, a slightly larger percent of companies without staff than with staff found it produced most worth-while results.

Learning Curve

Research on the use of a "learning curve" or "time reduction curve" would have as its objective providing the buyer with a technique useful in targeting a price as a basis for negotiating with vendors. While the use of this technique has, to date, largely been in government-connected procurements, some firms have found that it has equally useful applications in non-government-connected procurements.

In one concern interviewed, Purchase Research spent considerable time in investigating the usefulness of this technique in procurement of various classes of manufactured parts in which price was dependent largely on the amounts of direct labor required to manufacture. The result of this research was the development of a learning curve slide rule, which was furnished to the buyers, along with instructions for its use in

procurement of various classes of purchased items. The buyer could use this calculator to assist in establishing an estimated purchase price. The company realized that this target purchase price was only an estimate, although they felt the use of this technique placed the buyer in a better position to begin negotiation.

Analysis of Table 9-9 shows that three times as many firms with a research staff indicated they had done research on this topic as was indicated by companies without staff. Twenty-four percent of the companies with staff researched this topic, compared to only 8% of those companies without staff, producing an occurrence factor of 3. The three industries in which the largest percent of companies with staff did research on this topic were: Electrical Machinery, Equipment, and Supplies (67%); Transportation Equipment (41%); and Fabricated Metal Products (40%).

Five percent of the companies with staff found this topic produced most worth-while results; none of the companies without staff indicated most worth-while results from this topic. The benefit factor will be shown as 5, although it actually cannot be computed for this topic. The evaluation factor also cannot be computed for this topic, for none of the companies without staff indicated most worth-while results produced; however, since 21% of those firms with staff, which researched this topic, declared it produced most worth-while results, the evaluation factor is shown as 21.

Table 9-9. Learning Curve

Industry Classification	Number Companies				Percent of Companies				Percent Indicating Most Worth-while Results							
	Reporting				Researching Topic				All Companies Reporting				Only Companies Which Researched This Topic			
	w/ Staff	w/o Staff	Total	w/ Staff	w/ Staff	w/o Staff	Total	w/ Staff	w/ Staff	w/o Staff	Total	w/ Staff	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	4%	11%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Transportation Equip.	17	20	24	41	10	3	6	0	11	14	0	0	0	0	0	0
Chemicals	13	20	6	15	0	3	8	0	50	50	0	0	0	0	0	0
Machinery, except Electrical	14	16	20	21	19	3	7	0	17	33	0	0	0	0	0	0
Primary Metals	10	18	11	0	17	0	0	0	0	0	0	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15	38	67	20	4	11	0	11	17	0	0	0	0	0	0
Paper	3	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	13	29	0	0	0	0	0	0	0	0	0	0	0	0
Fabricated Metal Prod.	5	10	33	40	30	0	0	0	0	0	0	0	0	0	0	0
Stone, Clay and Glass	4	8	8	0	13	0	0	0	0	0	0	0	0	0	0	0
Textile Mill Product and Apparel	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	22	25	20	11	25	0	50	100	0	0	0	0	0	0
Mining	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Petroleum Refining	0	6	0	--	0	0	--	0	0	--	0	--	0	0	0	0
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--	0	--	0	0	0	0
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Printing and Publishing	0	5	0	--	0	0	--	0	0	--	0	--	0	0	0	0
AVERAGE			13	24	8	2	5	0	12	21	0	0	0	0	0	0

Payment or Cash Discount

Research in this area would be directed toward arriving at decisions on method of payment for items purchased, timing of payment, and systems for assuring that advantageous cash discounts are taken.

In one of the companies interviewed, the Purchase Analyst made a study to determine under what conditions cash discounts should be taken, and to simplify the paper work necessary to assure that advantageous discounts were taken. Determination was made as to whether discounts should be taken and payment made before the material was checked as satisfactory, and under what conditions this should be done. The result of this project was a written policy and procedural statement on this subject.

Analysis of Table 9-10 shows that the percent of companies with staff which researched this topic was almost twice as large as that for companies without staff. Fifty-nine percent of companies with staff researched this topic, while only 30% of those without staff did research, producing an occurrence factor of 2. In all industry groups but one, (Lumber and Wood Products), the percent of companies with staff which researched this topic was higher than the percent of companies without staff.

Table 9-10. Payment or Cash Discount

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	41%	67%	35%	9%	0%	11%	21%	0%
Transportation Equip.	17	20	30	41	20	0	0	0	0	0
Chemicals	13	20	30	46	20	6	8	5	20	17
Machinery, except Electrical	14	16	43	64	25	3	7	0	8	11
Primary Metals	10	18	50	70	39	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15	42	67	27	13	11	14	30	17
Paper	3	13	31	33	31	6	0	8	20	0
Crude Petroleum and Natural Gas	7	8	60	71	50	0	0	0	0	0
Fabricated Metal Prod.	5	10	67	80	60	0	0	0	0	0
Stone, Clay and Glass	4	8	42	75	25	0	0	0	0	0
Textile Mill Product and Apparel	1	9	40	100	33	20	100	11	50	100
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	33	50	20	0	0	0	0	0
Mining	2	5	43	100	20	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	--
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--
Lumber and Wood Prod.	1	4	20	0	25	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	20	--	20	50	--
AVERAGE			40	59	30	5	4	5	12	7
										16

The benefit factor, computed from Table 9-10, is .8, showing that more companies without staff found this topic produced most worth-while results than was found by companies with staff. The evaluation factor is .4 showing that when researched, the results were valued more highly by companies without staff.

Small or Rush Orders

Research on this topic would be directed at analysis of the problem of handling those purchase orders on which the total dollars involved are small, and those purchase orders which must be processed in a less than normal lead time. If successful, this research would result in recommendation of methods by which problems arising from these purchases could be avoided, and such purchases could be processed most economically.

Table 9-11 shows that 71% of companies with staff did research on the Small or Rush Orders topic, compared to 40% of those companies without staff. The occurrence factor, computed from these percentages is 1.8. In all fourteen industries in which some companies had staff, the percent of companies with staff which researched this topic was as large or larger than the percent for companies without staff. The benefit factor, computed from Table 9-11, is 1.9, showing that a much larger percent of companies with staff found this topic produced most worth-while results. However, of those companies which actually

Table 9-11. Small or Rush Orders

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	43%	44%	43%	2%	0%	3%	5%	0%
Transportation Equip.	17	20	54	71	40	8	23	0	15	33
Chemicals	13	20	58	85	40	12	15	10	21	18
Machinery, except Electrical	14	16	57	71	44	10	7	13	18	10
Primary Metals	10	18	57	80	44	4	0	6	7	0
Electrical Machinery, Equip. and Supplies	9	15	46	67	33	4	11	0	9	17
Paper	3	13	25	33	23	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	53	86	25	13	15	13	25	17
Fabricated Metal Prod.	5	10	60	60	60	20	20	20	33	33
Stone, Clay and Glass	4	8	58	100	38	8	0	13	14	0
Textile Mill Product and Apparel	1	9	80	100	78	30	100	23	38	100
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	100	40	34	75	0	50	75
Mining	2	5	43	50	40	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	--
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	40	--	40	67	--
AVERAGE			50	71	40	9	13	7	18	18

researched this topic, the percent which found this research produced most worth-while results was almost identical, as indicated by the evaluation factor of 1.

Method for Evaluating Buyer Performance

The development of a satisfactory procedure or system for measuring the effectiveness with which buying personnel discharge their responsibilities has never been an easy matter. Inherent in development of such a system might be determination of standards for performance, so that a comparison of individual buyer performance with the established standard would enable useful judgments.

In one of the companies interviewed, a system was developed in 1960 by the Purchase Analyst by which each buyer would be rated twice yearly, by both his immediate supervisor and also the General Purchasing Agent. The system required rating the buyer on two major categories. The first was on quantity of work performed, for which the applicable statistics were obtained from already existent departmental records. The second major rating category consisted of 36 individual characteristics, each described in detail. These 36 specific characteristics were subdivided into three categories: (1) Personal traits, aptitude, and abilities; (2) Basic purchasing knowledge and skills, and (3) Relationships with people. On each of the 36

items, the buyer was rated on a four-place scale. The 36 items had various numerical values (all were not of equal weight). A summation of the ratings on each item gave a numerical rating for the buyer. This rating, combined with the rating on the first category, gave the summary rating for the buyer.

Table 9-12 shows that a much larger percent of companies with a purchase research staff did research on this topic than was done by companies without staff. Seventy-five percent of companies with staff researched this topic, compared to 33% of companies without staff, giving an occurrence factor of 2.3. In all but one of the 14 industry classifications in which some companies had staff, the percent of companies with staff which did research was as large or larger than it was for companies without staff.

The benefit factor, computed from Table 9-12, is 3.3, although the percent of companies indicating this topic produced most worth-while results was relatively small (10% of companies with staff, 3% of companies without staff). The evaluation factor of 1.3 shows that when this topic was researched, a higher percent of companies with staff declared it produced most worth-while results than was indicated by companies without staff.

Method for Evaluating Purchasing Department Performance

A frequent problem, both for the purchasing manager and for

Table 9-12. Method for Evaluating Buyer Performance

Industry Classification	Number Companies Reporting			Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
	Reporting			Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total
Food and Tobacco	9	37	37%	89%	24%	2%	0%	3%	6%	0%	11%	11%
Transportation Equip.	17	20	46	71	25	6	12	0	12	17	0	0
Chemicals	13	20	61	92	40	12	16	10	20	17	25	25
Machinery, except Electrical	14	16	57	86	31	3	7	0	6	8	0	0
Primary Metals	10	18	54	60	50	11	0	17	20	0	33	33
Electrical Machinery, Equip. and Supplies	9	15	54	78	40	4	11	0	8	14	0	0
Paper	3	13	25	33	23	0	0	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	40	71	13	7	14	0	17	20	0	0
Fabricated Metal Prod.	5	10	60	100	40	13	40	0	22	40	0	0
Stone, Clay and Glass	4	8	50	50	50	0	0	0	0	0	0	0
Textile Mill Product and Apparel	1	9	50	0	56	0	0	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	100	40	22	25	20	33	25	50	50
Mining	2	5	29	50	20	0	0	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	--	0	0
Rubber and Plastics	0	6	0	--	0	0	--	0	0	--	0	0
Lumber and Wood Prod.	1	4	0	0	0	0	0	0	0	0	0	0
Printing and Publishing	0	5	60	--	60	0	--	0	0	--	0	0
AVERAGE			46	75	33	6	10	3	12	13	10	10

the top management of a company, is to answer the question, "How effectively is the purchasing function being performed?" To date, no completely satisfactory method has been advanced for answering this question. Research on this subject would involve setting up reasonable performance standards, and then developing a system for collection of data to indicate the degree to which the standard was achieved.

In one company interviewed, a research study directed at developing a system for measuring departmental performance had been under way for a two-year period. The criteria for developing this measurement technique were: (1) the measure should be simple to calculate; (2) the measure should be specific, rather than general; (3) it should not require collection of a new mass of data; and (4) it should be relatable to other business functions. Some 130 different specific measures of performance were studied; those appearing to offer little promise were discarded, and the final group consisted of 32 statistical measures, producing 16 ratios of performance. These 16 ratios were in four groups: related to time, price, quantity, and quality. Through a mathematical system, the combination of these 16 ratios produced one overall measure of purchasing department performance. While this company did not feel this system was the final answer to the evaluation problem, they felt it a step forward, offering some

interesting possibilities.

Table 9-13 shows that approximately twice as many of the companies with staff indicated research on the Method for Evaluating Purchasing Department Performance topic as was indicated by companies without staff. Seventy-five percent of companies with staff researched this topic, compared to 38% of those companies without staff. The occurrence factor is 2. In all industry classifications, a larger percent of companies with staff researched this topic than was done by companies without staff.

Ten percent of those companies with staff indicated this research produced most worth-while results, as compared to only 6% of companies without staff, giving an average benefit factor of 1.7. However, a larger percent of companies without staff which researched this topic declared it produced most worth-while results, as the evaluation factor of .8 shows.

Method for Evaluating Supplier Performance

Research in this area would be directed at developing better methods for judging how well a given vendor performed on business done. An evaluation of vendor performance should include not only performance on price and quality, but also performance in the somewhat intangible area of service. A usable system for evaluating vendor performance would require definition of desirable

Table 9-13. Method for Evaluating Purchasing Department Performance

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	43%	100%	30%	0%	0%	7%	0%	22%
Transportation Equip.	17	20	49	76	25	3	0	5	6	20
Chemicals	13	20	61	77	50	9	8	10	15	20
Machinery, except Electrical	14	16	67	86	50	13	15	13	20	25
Primary Metals	10	18	61	70	56	7	10	6	12	10
Electrical Machinery, Equip. and Supplies	9	15	63	89	47	21	34	14	33	29
Paper	3	13	25	33	23	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	47	71	25	7	14	0	14	0
Fabricated Metal Prod.	5	10	60	100	40	13	40	0	22	0
Stone, Clay and Glass	4	8	50	75	38	9	0	13	17	33
Textile Mill Product and Apparel	1	9	70	100	67	10	0	11	14	17
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	78	100	60	23	25	20	29	33
Mining	2	5	29	50	20	0	0	0	0	0
Petroleum Refining	0	6	33	--	33	0	--	0	0	0
Rubber and Plastics	0	6	17	--	17	0	--	0	0	0
Lumber and Wood Prod.	1	4	40	100	25	0	0	0	0	0
Printing and Publishing	0	5	20	--	20	0	--	0	0	0
AVERAGE			52	75	38	8	10	6	15	17

standards and means by which measurement of degree of attainment could be arrived at.

One of the companies interviewed had done research on this subject over a period of years, in which they attempted to define what was considered desirable supplier performance, and then devised means by which specific performance could be measured. The end result of this evaluation process produced a single number rating for a particular vendor. Based on this research, all buying divisions received information on this rating system, and it was implemented on a company-wide basis.

Table 9-14 shows that 64% of the companies with staff researched the Method for Evaluating Supplier Performance topic, compared to 33% of companies without staff. Computation from these percentages indicates an average occurrence factor of 1.9.

The benefit factor, computed from Table 9-14, is 3.5. A relatively small percent of both companies with and without staff indicated this topic produced most worth-while results: 7% of the companies with staff and only 2% of companies without staff. In only seven industries did any companies, either with or without staff, indicate this topic produced most worth-while results. The evaluation factor is 1.6, showing that when researched, a larger percent of companies with staff found it produced most worth-while results than was found by companies without staff.

Table 9-14. Method for Evaluating Supplier Performance

Industry Classification	Number Companies Reporting		Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
					All Companies Reporting			Only Companies Which Researched This Topic		
	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Food and Tobacco	9	37	39%	78%	30%	0%	0%	0%	0%	0%
Transportation Equip.	17	20	46	65	30	3	6	0	6	9
Chemicals	13	20	52	69	40	15	15	15	29	22
Machinery, except Electrical	14	16	47	64	31	3	7	0	7	11
Primary Metals	10	18	36	30	39	0	0	0	0	0
Electrical Machinery, Equip. and Supplies	9	15	58	78	47	8	0	14	14	0
Paper	3	13	25	67	15	0	0	0	0	0
Crude Petroleum and Natural Gas	7	8	60	71	13	10	14	0	17	20
Fabricated Metal Prod.	5	10	73	100	60	7	20	0	9	20
Stone, Clay and Glass	4	8	33	25	38	0	0	0	0	0
Textile Mill Product and Apparel	1	9	30	0	33	0	0	0	0	0
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	67	100	40	11	25	0	17	25
Mining	2	5	29	50	20	0	0	0	0	0
Petroleum Refining	0	6	17	--	17	0	--	0	0	--
Rubber and Plastics	0	6	17	--	17	0	--	0	0	--
Lumber and Wood Prod.	1	4	20	0	25	0	0	0	0	0
Printing and Publishing	0	5	40	--	40	0	--	0	0	--
AVERAGE			43	64	33	4	7	2	9	11

Comparison of Occurrence, Benefit, Evaluation Factors

Table 9-15 presents the occurrence factor, benefit factor, and evaluation factor for each of the 11 Purchasing System topics. While the occurrence factor is greater than 1 for all topics, it is highest on the Learning Curve topic, which has an occurrence factor of 3. The lowest occurrence factor for topics in this category is 1.4 (Blanket Orders, and Inventory Control).

The benefit factors in Table 9-15 show that only on the Payment or Cash Discount topic did a larger percent of companies without staff find most worth-while results produced than was found by companies with staff. On five of the topics the benefit factor is over 3.

The average evaluation factor for the 11 Purchasing System topics is 1, showing that, for this category, the same percent of firms both with and without staff produced most worth-while results on topics actually researched. On the Learning Curve topic, none of the firms without staff declared this topic produced most worth-while results, while 21% of those with staff which researched this topic found it produced most worth-while results. The Formulation of Price Index topic also has a high evaluation factor (4.3).

Evaluation of Research Performed by the Purchase Research Staff

That research done by the purchase research staff on topics

Table 9-15. Occurrence, benefit, and evaluation factors for the eleven purchasing system research topics

Research Topics	Occurrence Factor ^a	Benefit Factor ^b	Evaluation Factor ^c
Blanket Orders	1.4	1.1	.7
Data Processing Equipment	2	3.4	1.7
Forms Design	1.7	1.1	.7
Formulation of Price Index	2.6	6 ^d	4.3 ^d
Inventory Control	1.4	1.3	.9
Learning Curve	3	5 ^e	21 ^e
Payment or Cash Discount	2	.8	.4
Small or Rush Orders	1.8	1.9	1
Method for Evaluating:			
Buyer Performance	2.3	3.3	1.3
Purchasing Dept. Performance	2	1.7	.8
Supplier Performance	1.9	3.5	1.6
AVERAGE FACTOR	1.9	1.6	1

^aRatio of percent of companies with staff to percent of companies without staff which researched each topic.

^bRatio of percent of companies with staff to percent of companies without staff which indicated a topic produced most worth-while results.

^cRatio of percent of companies with staff to percent of companies without staff which declared most worth-while results produced when a topic was actually researched.

^dDue to the small number of firms which declared this topic produced most worth-while results, this factor may not be too meaningful.

^eNo companies without staff indicated this topic produced most worth-while results.

in the Research on the Purchasing System category was more highly regarded than that done by others within the purchasing department.

Twenty-four percent of the total topics in this category, which were researched solely by the purchase research staff, were declared to have produced most worth-while results (Table 9-16). This percent is 1.6 times as large as the percent of total topics researched solely by the buyer and found to have produced most worth-while results, and 1.4 times as large as the percent of total topics researched solely by the administrator and found to have produced most worth-while results.

On four topics in this category the percent researched solely by the purchase research staff which was found to have produced most worth-while results was larger than the similar percent for either the buyer or the administrator. These four topics were: Formulation of Price Index, Inventory Control, Small or Rush Orders, and Method for Evaluating Supplier Performance. The percent for topics researched solely by the staff was greater than for that done solely by the buyer on six topics, and greater than for that done solely by the administrator on seven topics.

This data provides one indication of the over-all effectiveness of the research done by the purchase research staff on topics in this category. From this it can be concluded that a company probably will produce more worth-while results from topics in the Research on the Purchasing System category if this research is done by staff purchasing research personnel.

Table 9-16. Research which produced most worth-while results when done by staff, buyer, or administrator alone in companies with purchase research staff

Research Topics	Number Companies Researching			Percent of Cos. Researching Indicating Most Worth-while Results Produced		
	Staff Alone	Buyer Alone	Administrator Alone	Staff Alone	Buyer Alone	Administrator Alone
Blanket Orders	13%	13%	24%	38%	46%	33%
Data Processing Equipment	26	4	22	31	50	9
Forms Design	29	13	24	10	15	13
Formulation of Price Index	16	7	14	19	0	14
Inventory Control	10	7	25	50	14	32
Learning Curve	7	1	9	29	0	33
Payment or Cash Discount	12	19	17	8	5	12
Small or Rush Orders	12	22	18	42	5	33
Method for Evaluating:						
Buyer Performance	16	4	36	19	25	11
Purchasing Department Performance	20	2	40	20	50	3
Supplier Performance	10	17	16	20	6	13
AVERAGE				24%	15%	17%

Personnel Involvement

1. The Purchase Research Staff

In companies which had a purchase research staff, that staff alone performed the research on 24% of the topics, and was involved in 42% of the topics, which were researched in the Purchasing System category.

Table 9-17 shows, by company size, the percent of topics re-searched by companies with staff in which their purchase research was involved. It also shows the percent of topics in which the research was done solely by the purchase research staff. Three topics stand out as ones in which, when researched, the staff alone was heavily relied on to do the research. On Forms Design, Formulation of Price Index, and Data Processing Equipment, 36%, 36%, and 34%, respectively, of the companies which did research relied solely on their staff for this work. For all 11 topics, an average of 24% of those topics researched were done solely by the research staff.

The average total involvement of the staff in all eleven topics researched was 42%. On only one topic, Data Processing Equipment, was the staff involved in over 50% of the companies which researched this topic (total involvement of 62%). The topic with the lowest total involvement was Payment or Cash Discount, where the staff was involved in only 29% of the companies which researched this topic.

Table 9-17. Involvement of purchase research staff in research on the purchasing system, by company size

Company Size (Sales)	Percent of Those Cos. Researching Each Topic in Which Their Purchase Research Staff Was Involved ^a					Percent in Which Only PR Staff Involved
	Under \$100 Million	\$100-499 Million	\$500-999 Million	\$1,000 Mil. and Over	Total	All Companies
Number of Companies with Staff	8	59	14	18	99	99
<u>Research Topics</u>						
Blanket Orders	33%	35%	50%	63%	40%	16%
Data Processing Equipment	20	57	82	75	62	34
Forms Design	13	46	64	60	48	36
Formulation of Price Index	0	40	67	73	49	36
Inventory Control	25	33	55	70	41	15
Learning Curve	0	40	33	67	46	29
Payment or Cash Discount	20	26	43	33	29	20
Small or Rush Orders	17	30	36	43	33	17
<u>Method for Evaluating:</u>						
Buyer Performance	0	30	80	79	44	21
Purchasing Dept. Performance		30	64	67	39	25
Supplier Performance	0	29	50	50	34	16
Average involvement for the above topics	13	36	58	61	42	24

^a Computation of percent of total purchase research staff involvement made by (1) adding the number of topics researched by the purchase research staff alone and in combination with the buyer and/or the administrator, and (2) dividing this number by the number of companies which indicated the topic was researched.

Company size did appear to affect the average total involvement of the research staff in topics researched in this category. Average total involvement in the smallest size category was only 13%, but it was 36%, 58%, 61%, respectively, in the larger size categories.

In those companies with staff, the staff alone researched an average of 1.7 topics in the Purchasing System category, and was involved (indicated as doing the research alone, as well as with other individuals) in an average of 3.2 topics in this category.

2. The Administrator

The administrator was involved in a smaller percentage of those total topics researched in the Purchasing System category in companies which had a purchase research staff.

The administrator alone did research on 34% of the total topics in this category in companies with staff, compared to 47% of those topics researched by companies without staff. On each of the eleven topics in this category, the administrator alone, in companies with staff, was involved in a smaller percent of those topics researched than the administrator in companies without staff. (Table 9-18)

Total administrator involvement (topics researched by the administrator alone, as well as with others within the department)

Table 9-18. Administrator involvement in purchase research on the purchasing system in companies researching each topic

Research Topics	Percent of Those Companies Researching Each Topic in Which Administrator Was Involved ^a			
	Companies w/Staff		Companies w/o Staff	
	Administrator Alone	Administrator; Adm. & Buyer; Adm. & PR; Adm., PR & Buyer	Administrator Alone	Administrator and Buyer
Blanket Orders	29%	40%	33%	60%
Data Processing Equipment	29	63	51	69
Forms Design	30	48	47	61
Formulation of Price Index	31	49	47	68
Inventory Control	37	41	54	71
Learning Curve	38	46	71	71
Payment or Cash Discount	29	29	57	50
Small or Rush Orders	25	32	22	39
Method for Evaluating:				
Buyer Performance	48	44	74	81
Purchasing Dept. Performance	50	46	74	82
Supplier Performance	25	38	33	62
Average involvement for the above topics	34	43	47	64

^aPercent is not a percent of the 99 or 205 companies. It is a percent of those companies which indicated they did research in each area. For example, Blanket Orders was researched by 83 companies with staff.

in the total topics actually researched also was greater in those companies without staff, for the administrator was involved in 64% of topics researched in companies without staff, but in only 43% of topics researched by companies with staff. The higher administrator involvement in companies without staff held true for all eleven topics.

The average number of topics in which the administrator was involved was larger in those companies with staff. The administrator alone did research on an average of 2.5 topics in companies with staff, compared to 1.8 topics in companies without staff (Table 9-19). The administrator was involved (did research alone, and with others in the department) in an average of 3.2 topics in companies with staff, but only 2.5 topics in companies without staff. Thus, in companies with staff, the administrator alone did research on 1.4 times as many topics, and was involved in 1.3 times as many topics, as he was in companies without staff. However, those companies with staff researched 1.9 times as many topics as were researched by companies without staff. This shows that although the administrator in companies with staff did do research on more topics, this increase was not as great as the increase in topics researched by companies with staff over those without staff.

From the above data it can be concluded that the administrator is likely to be involved in a smaller percentage of that research

Table 9-19. Administrator involvement in research on the purchasing system

Research Topics	Percent of Cos. in Which Administrator Was Involved in Research ^a			
	99 Companies with Staff		205 Companies without Staff	
	Administrator Alone	Administrator; Adm. & Buyer; Adm. & PR; Adm., PR & Buyer	Administrator Alone	Administrator; Administrator, and Buyer
Blanket Orders	24%	33%	19%	35%
Data Processing Equipment	22	48	19	26
Forms Design	24	38	23	30
Formulation of Price Index	14	22	8	11
Inventory Control	25	28	26	35
Learning Curve	9	11	6	6
Payment or Cash Discount	17	17	6	15
Small or Rush Orders	18	23	11	16
Method for Evaluating:				
Buyer Performance	36	33	24	26
Purchasing Dept. Performance	40	37	28	31
Supplier Performance	16	24	11	20
Average Percent	22%	29%	17%	23%
Average Number of Topics	2.5	3.2	1.8	2.5

^aPercentage was calculated on the total number of companies in each group, and not on only those which researched each topic.

on the Purchasing System done by companies with staff, for specialized staff is available to perform some of the research. However, since companies with staff research a larger number of topics, the administrator in the companies will be involved in research on a larger number of topics. The increase in average number of topics in which the administrator will be involved, however, will not be as great as the increase in total topics researched in companies with staff over companies without staff, due to the assistance provided by the purchase research staff.

3. The Buyer

The buyer in companies without a research staff was involved in a higher percent of the topics actually researched, compared to the buyer in companies with staff.

The buyer alone did the research on 36% of the topics researched in companies without staff, but only 15% of the topics actually researched by companies with staff. Total buyer involvement (topics on which the buyer alone, plus with other individuals within the department, was involved) on topics actually researched showed the buyer involved in 53% of the topics in companies without staff, but only 32% of the topics in companies with staff (Table 9-20).

Buyer alone involvement on topics actually researched was greater on all eleven topics in the Purchasing System category

Table 9-20. Buyer involvement in purchase research on the purchasing system in companies researching each topic

Research Topics	Percent of Those Companies Researching Each Area in Which Buyer Was Involved ^a			
	Companies w/Staff		Companies w/o Staff	
	Buyer Alone	Buyer; Adm. & Buyer; Adm., PR & Buyer	Buyer Alone	Buyer; Administrator and Buyer
Blanket Orders	16%	42%	40%	67%
Data Processing Equipment	5	16	31	49
Forms Design	16	24	39	53
Formulation of Price Index	16	27	32	53
Inventory Control	10	38	29	46
Learning Curve	4	33	29	29
Payment or Cash Discount	32	47	50	63
Small or Rush Orders	31	52	61	78
Method for Evaluating:				
Buyer Performance	5	19	19	25
Purchasing Dept. Performance	3	11	18	26
Supplier Performance	27	52	37	67
Average involvement for the above topics	15	32	36	53

^aPercent is not a percent of the 99 or 205 companies. It is a percent of those companies which indicated they did research in each area. For example, Blanket Orders was researched by 83 companies with staff.

in those companies without staff. On the following three topics in this category, the percent of buyer alone involvement in topics researched by companies without staff was at least six times greater than in companies with staff: Learning Curve (7.3 times greater), Data Processing Equipment (6.2 times greater), and Method for Evaluating Purchasing Department Performance (6 times greater).

Total buyer involvement in topics researched was greater in companies without staff in all but one of the eleven topics in this category. Only on the Learning Curve topic was the buyer involved in a larger percent of companies with staff which researched this topic.

Even though the buyer in companies with staff was involved in a smaller percent of topics actually researched, compared to companies without staff, he was involved in a larger average number of research topics. The buyer alone, in companies without staff, researched an average of 1.4 topics, and only 1.1 topics in companies with staff. But in total, the buyer in companies with staff did research on an average of 2.4 topics, and only 2.1 topics in companies without staff (Table 9-21). Thus, although the buyer alone did research on fewer topics in companies with staff, the buyer along with others in the purchasing department actually researched 1.1 times as many topics in companies with staff, compared to companies without staff. This increase

Table 9-21. Buyer involvement in research on the purchasing system

Research Topics	Percent of Companies in Which Buyer Was Involved in Research ^a			
	99 Companies with Staff		205 Companies without Staff	
	<u>Buyer Alone</u>	Buyer; Adm. & Buyer; Adm. & PR; Adm., Buyer & PR	<u>Buyer Alone</u>	Buyer; Administrator and Buyer
Blanket Orders	13%	35%	23%	39%
Data Processing Equipment	4	12	12	19
Forms Design	13	19	19	26
Formulation of Price Index	7	12	5	9
Inventory Control	7	26	14	22
Learning Curve	1	8	2	2
Payment or Cash Discount	19	28	15	19
Small or Rush Orders	22	37	24	31
Method for Evaluating:				
Buyer Performance	4	14	6	8
Purchasing Dept. Performance	2	9	7	10
Supplier Performance	17	33	12	22
Average Percent	10%	21%	13%	19%
Average Number of Topics	1.1	2.4	1.4	2.1

^aPercentage was calculated on the total number of companies in each group, and not on only those which researched each topic.

in number of topics researched was much less than the increase (1.9 times) in topics researched in companies with staff over those without staff. These figures indicate that while the introduction of a research staff decreases the number of topics researched solely by the buyer, it increases the number of topics on which the buyer, along with others in the department, does research.

From the above data, this conclusion follows: While the buyer probably will be involved in a smaller percent of the topics in the Purchasing System category actually researched by companies which have a research staff, the buyer in companies with staff probably will be involved in a larger number of research topics than the buyer in companies without staff. The increase in number of topics in which the buyer is involved in companies with staff over those without staff, however, will not be as great as the increase in total topics researched by companies with staff, for the purchase research staff is available to assume a part of this additional research work.

Chapter Summary

As in the previous two chapters, a comparison was made between the 99 companies with a purchase research staff and the 205 companies without staff in order to draw conclusions regarding purchasing research on the Purchasing System.

Companies with staff researched an average of 1.9 times as many topics in the Purchasing System category as those companies without staff. A higher percent of companies with staff, than without staff, researched each of the eleven topics in this category.

Those companies with staff declared 1.6 times as many topics in this category produced most worth-while results as were declared by companies without staff. Considering only topics actually researched, the percent of companies with staff which declared most worth-while results produced was the same as the percent for companies without staff.

Company size appeared to only slightly affect the number of topics researched by companies with staff, and to have no effect on number of topics researched by companies without staff.

Companies with staff researched more topics in all industry classifications. The average percent of topics researched was particularly large in the following five industry classifications: Fabricated Metal Products (78%); Electrical Machinery, Equipment and Supplies (78%); Ordnance; Leather; Professional, Scientific, Optical Equipment; Miscellaneous Manufacturing (73%); Chemicals (71%); and Crude Petroleum and Natural Gas (71%).

An analysis was made in this chapter of each of the eleven individual research topics. These topics were: Blanket Orders, Data Processing Equipment, Forms Design, Formulation of Price Index, Inventory Control, Learning Curve, Payment or Cash Discount,

Small or Rush Orders, Method for Evaluating Buyer Performance, Method for Evaluating Purchasing Department Performance, and Method for Evaluating Supplier Performance. A description of each topic was given, and an example of this type research was presented, where possible, from one of the ten companies interviewed. Additionally, a table was presented for each topic to show, by industry classification, the percent of companies which researched the topic, and declared most worth-while results from the topic.

Topics researched by the purchase research staff alone were regarded more highly than topics researched by either the buyer alone or the administrator alone. The percent of topics researched by the staff alone which were regarded as having produced most worth-while results was 1.6 times as large as that for topics researched by the buyer alone, and 1.4 times as large as that for topics researched by the administrator alone.

The purchase research staff alone did the research on 24% of the topics researched in companies with staff, and was involved (either doing the research alone, or along with others in the department) in 42% of the topics researched. The average number of topics in the Purchasing System category researched by the staff alone was 1.7; the average number of topics in which the staff was involved was 3.2.

The administrator was involved in a smaller percentage of the total topics researched in companies which had a staff. However, the administrator alone, and in total, was involved in a larger number of research topics in companies with staff (alone: 2.5 to 1.8; in total, 3.2 to 2.5). The increase in number of topics in which the administrator was involved in companies with staff over those without staff was not as large as the increase in topics researched by companies with staff.

The buyer in companies without staff was involved in a higher percent of those topics actually researched, compared to the buyer in companies with staff. The average number of topics on which the buyer alone did research was larger in companies without staff (1.4 to 1.1), but the average number of topics in which the buyer was involved (did research alone, and alone and with others in the department) was larger in companies with staff (2.4 to 2.1). However, the increase in number of topics on which the buyer in total was involved in companies with staff was not as great as the increase in topics researched in companies with staff.

CHAPTER X

RELATED ACTIVITIES AND DATA SOURCES

Introduction

This chapter presents an analysis of related activities which were performed by the purchase research staff, and the data sources which were used in purchasing research. Two of the hypotheses of this study were that (1) staff purchasing research personnel often become involved in work not strictly of a research nature, and (2) those companies with a staff purchasing research function employ a larger number of data sources in their purchasing research than are used by companies without staff. The majority of the data in this chapter on related activities performed by staff research personnel and the data sources used in purchasing research were obtained from the mail survey, although some information on the ten companies interviewed also is presented.

The number of related activities in which a purchase research staff could become involved is practically limitless. However, 12 such related activities were selected, and the questionnaire asked companies to indicate which of these activities were performed either by staff research personnel or by buying personnel in their company during 1959 or 1960, and to indicate which activities were of greatest importance (Question 8).

Since this question did not attempt to determine which of the twelve related activities were performed by administrators within the purchasing department, the reader should keep in mind that statements made about related activities performed in the two groups of companies refer to such activities as were performed by only staff purchasing research personnel and/or by buying personnel.

To obtain information on the data sources used for purchasing research work, 22 general types of data sources were listed on the questionnaire (Question 7). Companies were asked to indicate which of these 22 information sources were used in their purchasing research, and also to indicate the ones they considered most useful.

As in the previous three chapters, the responses from the 99 companies with staff and the 205 companies without staff were both adjusted to a basis of 100, in order that the two groups could be compared. Additionally, statements made about related activities performed and considered of greatest importance, and data sources used and considered most useful, in all cases refer to an average for companies in that group.

Related Activities Performed

Companies with a purchase research staff performed 1.6 times as many related activities as were performed in companies

without staff. Those companies with a research staff performed an average of 57% of the twelve listed related activities, compared to only 35% in companies without staff (Table 10-1).

All 12 related activities were performed by a larger percent of those companies with staff than by those without staff. In the following four related activities, the percent of companies with staff which performed that related activity was two or more times greater than the percent for companies without staff: Conduct Management Audit of Purchasing Operation (3.2 times greater), Assemble Competitor Intelligence Information (2.1 times greater), and Prepare Forecast of Business Trends, and Administer or Conduct Purchasing Training Program (both were two times greater).

There was a substantial difference, both in companies with staff and those without, in the percent of companies which performed the 12 listed, related activities. Table 10-1 shows that the Prepare Data for Vendor Negotiation activity was performed by the largest percentage of companies with staff (84%), while the Assemble Competitor Intelligence Information activity was performed by the smallest percent of companies with staff (32%). However, all but three of the related activities were performed by at least 50% of those companies with staff. In companies without staff, on the other hand, only two activities were performed by as many as 50% of the

Table 10-1. Companies performing related activities; percent indicating related activities of greatest importance

Related Activity	Percent Companies Performing		Percent Cos. Declaring of Greatest Importance	
	Co. w/ Staff	Co. w/o Staff	Co.w/ Staff	Co. w/o Staff
Supply current market information to others	77%	61%	18%	11%
Prepare data for vendor negotiation	84	50	13	10
Maintain price index	59	39	6	4
Prepare or maintain purchasing manual	65	40	18	5
Maintain purchasing library	43	33	2	1
Prepare purchasing budget	60	40	3	2
Conduct management audit of purchasing operation	57	18	11	2
Prepare forecast of business trends	43	21	7	2
Inform another department on current business trends	57	44	7	4
Prepare purchasing personnel requirements forecast	50	28	5	1
Administer or conduct purchasing training program	55	28	6	3
Assemble competitor intelligence information	32	15	4	1
AVERAGE PERCENT	57%	35%	9%	4%

Table 10-1. Components of
Indicator

Related Activities			
Supply current market action to other			
Prepare data for negotiation			
Maintain price in			
Prepare or maintain manual			
Maintain purchasing			
Prepare purchasing			
Conduct management & purchasing operation			
Prepare forecast of trends			
Inform another department of current business trends			
Prepare purchasing personnel requirements forecast			
Administer or conduct purchasing training program			
Assess competitor intelligence information			
AVERAGE PERCENT			
4	12	12	12
4	12	12	12

companies. The Supply Current Market Information to Others activity was performed by the largest percent of companies without staff (61%), while Assemble Competitor Intelligence Information was performed by the smallest percent of the companies (15%).

Activities Considered of Greatest Importance

Companies with a purchase research staff indicated 2.3 times as many activities were of greatest importance as were indicated in companies without staff. An average of nine percent of companies with staff considered these 12 related activities of greatest importance, compared to only 4% of companies without staff (Table 10-1). On each of the 12 related activities, a higher percent of companies with staff considered the activity of greatest importance than companies without staff.

The Conduct Management Audit of Purchasing Operation activity showed the greatest difference between percent of companies with, and those without, staff which considered it of greatest importance, for the percent of companies with staff which declared this activity of greatest importance was 5.5 times larger than the percent of companies without staff. On the Prepare Purchasing Personnel Requirements Forecasts activity, the percent of companies with staff which declared this of

the percent of companies with staff which denied this of

the Foreign Purchasing Personnel reported forecasts actively

times larger than the percent of companies without staff. On

which declared this activity of greatest importance was 2.2

of greatest importance, for the percent of companies with staff

companies with, and those without staff, was 1.2 and 1.1

activity showed the greatest difference between the two

The Conduct Management and

without staff.

considered the activity of

related activities, a lower

companies without staff

activities of greatest

percent of companies

indicated in companies

times as many activities

Companies with

Activities Considered

companies (13%).

Information was per-

without staff (61%), and

activity was performed

companies. The supply

greatest importance was five times greater than in companies without staff. The Prepare Data for Vendor Negotiation activity showed the least difference between companies with, and without, staff which declared this of greatest importance, but even on this activity the percent in companies with staff was 1.3 times greater than in companies without staff.

Relation between Company Size and Related Activities Performed

The number of related activities performed increased with increased company size in companies with staff. Company size did not affect the number of related activities performed in companies without staff. Companies with staff performed an average of 38% of the 12 related activities in the smallest size category. This percent increased to 56%, 60%, and 69% in the largest size category. In companies without staff, 37% of the activities were performed in companies in the smallest size category, 33% in the next size category, 37% in the third category, and 42% in the largest size category (Table 10-2).

Relation between Industry Classification and Related Activities Performed

Companies with staff performed a larger number of related activities than companies without staff in all but four of the 14 industrial classifications in which some companies had staff.

greatest importance was the fact that the companies without staff. The companies with staff showed the least activity showed the least activity and without staff without staff but even on this point the companies with staff was 1.3 times greater than the companies without staff.

Relation between Staff and Related Activities

The number of staff employed by the companies increased company size. The companies with staff did not affect the number of companies without staff. The average of 38% of the companies in the largest size category. This percentage was 38% in the largest size category. 37% of the activities were performed by the companies in the smallest size category. 37% of the activities were performed by the companies in the third category, and 37% of the activities were performed by the companies in the third category. (Table 10-2).

Relation between Industry Classification and Related Activities

Companies with staff performed a larger number of related activities than companies without staff. In all four of the industrial classifications in which were companies had staff.

Table 10-2. Companies performing related activities, by company size

Related Activities	Company Size (1959 Sales, Million Dollars)											
	Under 100			100-499			500-999			1000 and Over		
	w/ Staff	w/o Staff		w/ Staff	w/o Staff		w/ Staff	w/o Staff		w/ Staff	w/o Staff	
Number of Respondents:	8	52	59	121	14	21	18	11				
Supply Current Market Information	50%	65%	76%	60%	86%	57%	89%	55%				
Prepare Data for Vendor Negotiation	75	52	85	46	79	57	94	64				
Maintain Price Index	38	40	58	39	57	38	78	36				
Prepare or Maintain Purch. Manual	75	52	63	33	64	43	72	45				
Maintain Purch. Library	38	40	41	32	36	29	61	27				
Prepare Purchasing Budget	38	48	56	36	79	38	72	45				
Conduct Mgt. Audit of Purchasing	25	13	56	21	64	14	72	18				
Prepare Forecast of Business Trends	25	19	39	19	50	38	61	27				
Inform Another Department on Business Trends	38	44	61	44	57	38	56	64				
Prepare Personnel Requirements	13	25	46	29	64	33	72	36				
Administer or Conduct Training Program	25	23	56	27	57	43	67	45				
Assemble Competitor Intelligence Information	13	15	37	14	29	14	28	36				
AVERAGE PERCENT	38%	37%	56%	33%	60%	37%	69%	42%				

Only in Stone, Clay, and Glass; Mining; and Lumber and Wood was the percent of related activities performed by companies without staff greater than the percent for companies with staff. In Ordnance; Leather; Professional, Scientific, Optical; Miscellaneous Manufacturing, the percent of related activities performed was the same for both companies with, and without, staff. The percent of related activities performed by companies with staff was particularly large in the following five industries: Crude Petroleum (70%); Electrical Machinery, Equipment, and Supplies (69%); Chemicals (63%); Machinery, except Electrical (62%); and Food and Tobacco (61%) (Table 10-3).

Table 10-4 presents, by standard industrial classification, the percent of companies with and without staff which performed each of the 12 related activities. These data are presented for those personnel in companies in specific industries who might wish a more detailed analysis of related activities performed by companies in their industry.

Examples of Related Activities Performed by Staff

The number and type of related activities in which a purchase research staff might become involved are almost innumerable. The 12 related activities included on the questionnaire were not necessarily those in which a research staff would be

were not necessarily those in which a research staff would be
able. The 13 related activities included on the questionnaire
show research staff might become involved in almost numer-
ous. The number and type of related activities in which a per-
sonnel performed by staff

Examples of Related Activities

formed by companies in their own right

might wish a more detailed study

for those personnel in which

each of the 13 related

the percent of companies

Table 10-4 presents

(Table 10-3).

Machinery, except

Machinery, Equipment

following five

formed by companies

and without, staff

activities performed

Optical, Miscellaneous

staff, in Ordnance

without staff present

are the percent of

Only in Stone, Clay, and

Table 10-3. Companies performing related activities, by standard industrial classification

Industry	Number of Companies Responding		Percent Performing	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	9	37	61%	37%
Transportation Equipment	17	20	57	27
Chemicals	13	20	63	37
Machinery, except Electrical	14	16	62	32
Primary Metals	10	18	46	43
Electrical Machinery, Equip. and Supplies	9	15	69	36
Paper	3	13	53	31
Crude Petroleum and Natural Gas	7	8	70	31
Fabricated Metal Products	5	10	50	43
Stone, Clay, Glass	4	8	44	48
Textile Mill Product and Apparel	1	9	50	43
Ordinance; Leather; Professional, Scientific, Optical; Misc. Mfg.	4	5	52	52
Mining	2	5	21	25
Petroleum Refining	0	6	--	29
Rubber and Plastics	0	6	--	25
Lumber and Wood	1	4	25	33
Printing and Publishing	0	5	--	32
AVERAGE			57%	35%

Table 10-3. Comparison
standards

Industry			
Food and Tobacco			
Transportation			
Chemicals			
Machinery, except			
Primary Metals			
Electrical Machinery and Supplies			
Paper			
Crude Petroleum and Gas			
Fabricated Metal Products			
Stone, Clay, Glass			
Textile Mill Products and			
Ordinance, Leather, Products			
Scientific, Optical, Musical			
Mining			
Petroleum Refining			
Rubber and Plastics			
Lumber and Wood			
Printing and Publishing			
Average			

Table 10-4 Companies performing each related activity, by industrial classification

Industry	Number Companies		Supply Current Market Info.		Prepare Data for Vendor Negotiat.		Maintain Price Index		Prepare or Maintain Purch. Manual		Maintain Purch. Library		Prepare Purch. Budget	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	9	37	78%	65%	67%	57%	44%	43%	56%	35%	33%	41%	78%	41%
Transportation Equipment	17	20	71	35	88	40	47	25	71	35	41	20	71	25
Chemicals	13	20	92	75	100	50	69	60	54	40	69	25	54	50
Machinery, except Elec.	14	16	86	50	86	50	57	38	79	25	36	25	79	25
Primary Metals	10	18	60	78	60	56	70	44	50	56	40	56	50	33
Electrical Machinery, Equipment, Supplies	9	15	73	47	100	47	67	33	100	40	33	40	67	53
Paper	3	13	67	54	100	46	67	15	33	38	33	23	33	46
Crude Petroleum and Natural Gas	7	8	86	50	86	25	86	38	86	38	86	25	71	25
Fabricated Metal Prod.	5	10	80	60	80	50	60	50	80	60	20	40	40	60
Stone, Clay, Glass	4	8	75	75	100	63	50	50	50	63	25	38	25	50
Textile Mill Product and Apparel	1	9	100	78	100	67	0	44	100	44	0	44	100	33
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	4	5	75	80	75	60	75	40	50	80	25	20	50	80
Mining	2	5	50	60	50	40	50	20	0	20	50	40	0	20
Petroleum Refining	0	6	--	67	--	50	--	50	--	33	--	33	--	17
Rubber and Plastics	0	6	--	50	--	33	--	17	--	17	--	0	--	50
Lumber and Wood Prod.	1	4	100	75	100	75	0	50	0	25	100	25	0	25
Printing and Publishing	0	5	--	40	--	20	--	20	--	20	--	60	--	60
AVERAGE PERCENT			77%	61%	84%	50%	59%	39%	65%	40%	43%	33%	60%	40%

Table 10-4. Continued

Industry	Conduct Audit of Purch. Operation		Prepare Forecast of Bus. Trends		Inform Other Dept. on Cur. Bus. Trends		Prepare Personnel Req. Forecast Data		Conduct or Adm. Training Program		Assemble Competitor Intelligence		Average Percent	
	w/ Staff	o Staff	w/ Staff	o Staff	w/ Staff	o Staff	w/ Staff	o Staff	w/ Staff	o Staff	w/ Staff	o Staff	w/ Staff	o Staff
Food and Tobacco	56%	22%	78%	22%	67%	43%	44%	35%	56%	19%	56%	27%	61%	37%
Transportation Equip.	71	20	29	5	47	35	71	20	71	25	24	40	57	27
Chemicals	46	5	38	20	64	50	62	35	46	15	54	20	63	37
Machinery, except Elec.	64	19	50	25	71	38	50	19	64	31	21	44	62	32
Primary Metals	60	17	30	28	50	50	20	33	40	39	20	22	46	43
Electrical Machinery, Equipment, Supplies	78	7	44	27	56	20	89	33	78	33	33	47	69	36
Paper	33	31	33	0	33	33	33	23	67	54	100	8	53	31
Crude Petroleum and Natural Gas	71	13	57	38	71	63	57	25	43	13	43	25	70	31
Fabricated Metal Prod.	60	20	60	10	20	40	40	40	40	50	20	40	50	43
Stone, Clay, Glass	25	38	25	38	50	75	25	38	50	38	25	13	44	43
Textile Mill Product and Apparel	0	22	100	33	100	56	0	33	0	44	0	11	50	43
Ordnance; Leather; Prof., Scientific, Optical; Misc. Mfg.	50	40	50	40	75	40	25	40	75	30	0	20	52	52
Mining	0	40	0	0	50	20	0	20	0	20	0	0	21	25
Petroleum Refining	--	0	--	17	--	67	--	0	--	0	--	17	--	29
Rubber and Plastics	--	0	--	33	--	50	--	17	--	17	--	17	--	25
Lumber and Wood Prod.	0	0	0	50	0	50	0	0	0	0	0	25	25	33
Printing and Publishing	--	40	--	20	--	20	--	40	--	20	--	20	--	32
AVERAGE PERCENT	57%	18%	43%	21%	57%	44%	50%	28%	55%	28%	32%	15%	57%	35%

most likely to become involved. They were, however, chosen to be representative of the types of related activities which might be performed by a research staff.

The following are 16 examples of related activities engaged in by the purchase research staff in the 10 companies interviewed. These examples are presented to illustrate the types of related activities engaged in by a purchase research staff.

1. Interchangeability Lists

In the past, one company found that replacement parts for much of the company's materials handling equipment could be purchased from replacement parts manufacturers at substantial savings compared to the price from the original equipment manufacturer. Since this materials handling equipment was used in many divisions of the company, Purchase Research gathered data from each of the divisions on parts interchangeability, combined these data, and published interchangeability lists for the use of all divisional purchasing offices.

2. Dissemination of Commodity Data

One Purchase Research Department published a weekly commodity news information bulletin, sent to all plant purchasing personnel. This bulletin provided current news on general business activity, and changes in commodity supply, demand, and price. This information was largely a synthesis of

pertinent information contained in several of the trade papers and magazines. At the time of the interview, the Purchasing Research Department was considering the publication of a "Purchasing Newsletter," which would present timely information on significant changes made in the various plant purchasing departments, the work being done by Purchase Research, and current purchasing problems.

3. Price Break Manual

This loose-leaf manual was first published by Purchase Research in 1959, and was later revised as discount schedules or shipping tariffs changed. The purpose of this manual was to give plant personnel, requisitioning items, information on price breaks, or discounts available. For example, the initial statement from the page on grinding wheels was as follows: "Grinding wheels, various sizes, the minimum amount necessary to obtain various quantity discount brackets are as follows...."

4. Major Overhaul and Reconditioning Service Book

Based on information furnished by buying personnel, Purchase Research published a book listing all commodities or equipment on which overhaul and reconditioning services were available. Information was given on what this service costs, where it could be obtained, and how satisfactory were the results. Plant personnel could use this book to help determine whether to order

a new item, or to have an existing item overhauled or reconditioned. One quote from the book was as follows: "Used (contaminated) mercury can be cleaned to triple distilled quality. The cost depends upon the quantity returned to be cleaned, but generally approximates 15 percent of the original cost."

5. Speech Preparation

Since a number of the administrators within the purchasing function frequently were called upon to give speeches before various groups, Purchase Research assisted in preparation of a number of these speeches.

6. Commodity Price Book

Starting in 1958, key purchasing personnel were furnished a price history on significant purchased commodities. Quoted market prices were given for each month since 1960. These prices also were shown graphically. At the end of each month a letter, giving price quotations for that month, was prepared and sent to each holder of a commodity book, so that he might up-date his book.

7. Computation of Price Index

Purchase Research originally formulated for each major division a market price index of major purchased commodities.

At the end of each month Purchase Research computed for each division their market price index, and also their index of purchase prices paid. These indices were furnished to the appropriate purchasing administrators in each division and to purchasing management in the headquarters office.

8. Commodity Books

Loose-leaf books were made up periodically for use by requisitioners within the plants. All commodities purchased by the central purchasing department were listed alphabetically, together with an identity code signifying the name of the responsible buyer.

9. Preparation of Purchasing Manual

The Purchase Research Department spent approximately three man-months during 1960 in developing a "Purchasing Practices Guide," which was supplied to each buying office within the company. Before this manual was written, a survey was made of the procedures and practices of individual plant purchasing departments. Based on this survey, the manual was written to present the suggested best practices and procedures for purchasing operations. Due to individual plant differences, it was not mandatory that these practices and procedures be accepted by each purchasing department, provided they had cause for deviation. Review and revision of this manual in

1961 was anticipated.

10. Briefing Reports

Quarterly, the Chairman of the Board was briefed on purchasing activities by the Vice-President-Purchases. Purchase Research gathered data for this briefing on such things as capital expenditures, price levels, barter agreements, and inventory levels.

11. Periodic Reports

Based on the weekly activity reports of the individual buyers, each week Purchase Research prepared a summary report, highlighting significant commodity developments, which was furnished all buyers. Purchase Research also prepared a summary of the monthly reports of the individual chief purchasing executives, which was furnished to top management. Also, an annual report to "put in focus" the activities of the Purchasing Department was prepared for top management, to highlight accomplishments and to indicate the next year's plans and objectives.

12. Purchasing Annual Dollar Report

Purchase Research prepared annually an overall report of purchasing operations. Data for this report were obtained from the accounting departments in the appropriate plants, and

from the General Accounting Office. This report consisted largely of information on the dollars spent for various commodities, by various plants, and with various vendors. This report also gave a quick picture of the total materials situation and price trends.

13. Purchase Audit

At infrequent intervals, Purchase Research conducted a complete review of purchasing operations in one of the company's branch plants. Such audits required from one to three weeks within the plant, depending on the complexity of the purchasing operation. These reviews involved investigation of: (1) the organization of the purchasing function; (2) extent to which established procedures were followed, and the adequacy of locally established procedures; (3) selection of vendors and prices; (4) relations with other departments; and (5) efficiency of the physical layout and housekeeping procedures. After completion of such a review, the formal report was discussed with, and turned over to, the Director of Purchases at the headquarters office.

14. Administration of Purchasing Training Program

The Purchase Research Department had the responsibility for assessing the training needs of the corporation's purchasing personnel, and arranging for presentation of necessary

training courses. Frequently the Analyst who did this work contracted with educators or consultants for particular training courses, although some courses were taught by personnel within the various divisional purchasing departments. For courses taught by company personnel, the Analyst was responsible for developing the necessary instructional material.

15. Lead Time Lists

Purchase Research gathered data from buyers on lead times for specific commodities, compiled these data, and at six-week intervals published lead time lists which were furnished all requisitioners.

16. Inter-divisional Charges

Frequently the buying office of one company division was assigned purchasing responsibility for a commodity used throughout the company. Purchase Research was responsible for auditing these purchases to assure that all operating departments consuming this material had an equal opportunity to receive commodities bought at particularly favorable prices. In addition, Purchase Research acted as arbitrator for the pricing of inter-divisional transfers of materials. Inter-divisional transfers of materials were billed at commercial prices, but in the case of an item not commercially available,

the transferring division determined a "fair price" for the material. Purchase Research was responsible for review of this price in the event of dispute between divisions, and appropriate recommendations.

Importance of Related Activities
Performed by the Research Staff

Those related activities performed solely by the purchase research staff were ranked slightly higher in importance than the related activities performed solely by buying personnel. Fourteen percent of the total related activities performed solely by the research staff were declared of greatest importance, compared to 13% of the related activities performed solely by buying personnel (Table 10-5). Thus, the results of related activities performed by staff research personnel were ranked as being of slightly greater importance than the same activities performed by buying personnel. From this it can be concluded that related activities performed by the staff probably would be rated at least as high in importance as when performed by buying personnel.

Personnel Involvement

1. The Purchase Research Staff

The purchase research staff was heavily involved in related activities performed by companies with staff. Table 10-6 shows

Table 10-5. Importance of related activities performed solely by the purchase research staff or solely by buying personnel in companies with staff

Related Activities	Number Companies Reporting		Percent of Activities Performed Considered of Greatest Importance	
	Research Staff Alone	Buying Personnel Alone	Research Staff Alone	Buying Personnel Alone
Supply Current Market Information to Others	23	34	26%	26%
Prepare Data for Vendor Negotiation	22	34	15	9
Maintain Price Index	31	25	10	12
Prepare or Maintain Purchasing Manual	46	14	28	21
Maintain Purchasing Library	25	17	8	0
Prepare Purchasing Budget	39	17	5	6
Conduct Mgt. Audit of Purchasing	46	8	22	0
Prepare Forecast of Business Trends	23	10	13	10
Inform Another Department on Current Business Trends	25	21	4	14
Prepare Purchasing Personnel Requirements Forecast	31	15	6	13
Administer or Conduct Pur- chasing Training Program	37	14	14	7
Assemble Competitor Intelligence Information	8	14	13	16
AVERAGE	3.6	2.3	14%	13%

Table 10-6. Purchase research staff involvement in related activities in companies with staff, by company size, as a percent of those companies performing each related activity^a

Related Activities	Company Size (1959 Sales, Million Dollars)									
	Under 100		100-499		500-999		1000 and Over		Total	
	Done Solely by Staff	Staff Involved	Done Solely by Staff	Staff Involved	Done Solely by Staff	Staff Involved	Done Solely by Staff	Staff Involved	Done Solely by Staff	Staff Involved
Supply Current Market Information to Others	50%	50%	44%	24%	75%	42%	75%	31%	56%	30%
Prepare Data for Vendor Neg.	50	17	56	26	82	45	59	24	60	27
Maintain Price Index	0	0	56	53	63	50	71	64	58	53
Prepare or Maintain Purchasing Manual	50	50	92	81	67	67	62	54	78	71
Maintain Purchasing Library	33	33	63	63	80	80	55	45	60	58
Prepare Purchasing Budget	67	67	82	79	55	45	62	46	72	65
Conduct Management Audit of Purchasing Operations	100	100	94	91	67	67	77	62	86	81
Prepare Forecast of Business Trends	50	50	83	57	57	57	82	45	77	54
Inform Another Department on Current Business Trends	33	0	64	44	50	38	80	60	63	44
Prepare Purchasing Personnel Req. Forecast	0	0	78	70	67	56	62	54	70	62
Administer or Conduct Purchasing Training Program	50	50	82	73	63	63	75	58	75	67
Assemble Competitor Intelligence Information	0	0	59	27	75	25	40	20	56	25
AVERAGE PERCENT	44%	36%	70%	56%	67%	53%	67%	47%	67%	52%
AVERAGE NO. ACTIVITIES	2	1.6	4.7	3.7	4.8	3.8	5.5	3.9	4.6	3.0

^aThe difference between the percentage given for "Done Solely by Staff" and 100, is the percent of those activities performed in which there was buying personnel involvement; the difference between the percent given for "Staff Involved" and 100 is the percent of activities performed solely by the buying personnel.

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that the research staff alone performed 52% of the 12 related activities which were performed in companies with staff. The research staff was involved (performed the activity alone and together with the buying staff) in 67% of those related activities performed.

The staff, alone and in total, was involved in a smaller percent of the related activities performed in the smallest size category than in any of the three larger size categories, although in these three larger size categories there did not appear to be any relation between related activities performed and company size.

The Conduct Management Audit of Purchasing Operation activity had the largest involvement both by staff alone, and in total, with the staff involved in 81% and 86%, respectively, of the companies which performed that activity. The Supply Current Market Information to Others, and Assemble Competitor Intelligence Information activities had the smallest percent of total staff involvement in those companies which performed these activities (56% total involvement). The Assemble Competitor Intelligence Information activity had the smallest staff alone involvement (25%).

The staff alone performed an average of 3.6 of the total 12 related activities, and was involved in 4.6 of these related activities in companies with staff.

From the above information the following conclusion is indicated: If a company has staff purchase research personnel, these personnel probably would become involved in a considerable amount of work of other than a strictly research nature. The staff probably would assist the buyer and administrator by performing certain related activities involved in the operation of the purchasing function.

2. The Buyer

The buyer was involved in the performance of 1.3 times as many related activities in companies without staff as in companies with staff. Table 10-7 shows that in companies without staff the buyer performed an average of 35% of the 12 related activities, while in companies with staff the buyer was involved in performance of only 28% of the 12 related activities and alone performed only 19% of the related activities. In only three activities--Prepare Data for Vendor Negotiation, Inform Another Department on Current Business Trends, and Assemble Competitor Intelligence Information--was the buyer involved more heavily in companies with staff than in companies without staff. The buyer alone was involved less in each of the 12 activities in those companies with staff.

The average number of related activities in which the buyer alone was involved in companies with staff was 2.3;

Related Activities	Percent of Companies in Which Buying Personnel Involved ^a		
	Companies w/ Staff		Cos. w/o Staff
	Buying Personnel Alone	Tl. Buying Personnel Involvement	Buying Personnel
Supply Current Marketing Information to Others	34%	54%	61%
Prepare Data for Vendor Negotiation	34	61	50
Maintain Price Index	25	28	39
Prepare or Maintain Purchasing Manual	14	19	40
Maintain Purchasing Library	17	18	33
Prepare Purchasing Budget	17	21	40
Conduct Management Audit of Purchasing Operation	8	11	18
Prepare Forecast of Business Trends	10	20	21
Inform Another Dept. on Current Business Trends	21	32	24
Prepare Purchasing Personnel Requirements Forecast	15	19	28
Administer or Conduct Purchasing Training Program	14	18	28
Assemble Competitor Intelligence Information	14	24	15
AVERAGE PERCENT	19%	28%	35%
AVERAGE NUMBER OF RELATED ACTIVITIES	2.3	3.4	4.2

^aPercentage was computed on the 99 companies with staff, and the 205 companies without staff. It is not a percentage of only those companies which performed the activity.

alone and with the research staff the buyer was involved in an average of 3.4 of the 12 related activities. In companies without staff, the buyer was involved in an average of 4.2 related activities.

These data support the conclusion that the presence of a purchase research staff does serve to relieve the buyer of the performance of certain related purchasing activities.

Data Sources Used

Companies with a purchase research staff used 1.6 times as many data sources in their purchasing research as companies without staff. Companies with staff used an average of 44% of the data sources listed while companies without a research staff used only 28% of these data sources in their purchasing research (Table 10-8).

Each of the 22 listed data sources were used by a higher percentage of companies with staff. On the following ten data sources the percent of companies with staff which used the source was at least twice as large as the percent of companies without staff which used the source (figure in brackets indicates the number of times greater the percent for companies with staff was than the percent for companies without staff): Publications of Foreign Governments (19), U. S. Government Personnel (6.8), Representatives of Foreign Governments (4),

Table 10-8. Data sources used in purchasing research; data sources considered most useful

Data Sources	Percent Companies Using		Percent Companies Considering Most Useful	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Books on Purchasing	67%	55%	5%	8%
Consultants	21	9	6	2
Corporate Annual Reports	48	31	5	2
Other Depts. of Your Company	73	54	26	15
Public Libraries	18	6	1	.5
Purchasing Personnel in Other Companies	66	44	12	10
Representatives of Foreign Governments	12	3	0	0
Trade Association Personnel	35	21	6	3
Trade Newspapers and Magazines	81	60	20	16
U. S. Government Personnel	27	4	8	0
Vendor Sales Personnel	74	64	25	25
Vendor Technical Personnel	73	57	35	24
Publications of:				
Foreign Governments	19	1	0	0
N. A. P. A.	17	61	9	13
Trade Associations	62	38	10	4
United Nations	15	0	1	0
U. S. Dept. of Agriculture	23	12	7	3
U. S. Dept. of Commerce	38	17	10	2
U. S. Dept. of Labor	26	8	8	0
U. S. Dept. of Interior	17	6	5	.5
Universities	30	8	2	1
Vendors	61	47	11	7
AVERAGE PERCENT	44%	28%	10%	6%
AVERAGE NO. DATA SOURCES	9.8	6.1	2.2	1.4

Publications of Universities (3.7), Publications of U. S. Department of Labor (3.3), Public Libraries (3), Publications of U. S. Department of Interior (2.8), Consultants (2.3), Publications of U. S. Department of Commerce (2.2), and Publications of United Nations (used by 15% with staff, none without staff).

It is perhaps significant that while there was not a large difference between the percent of companies with, and without, staff which used many of the less technical data sources for their purchasing research, the more technical sources, such as government personnel and publications, were used much more extensively by companies with staff. From this it might be concluded that those companies with a purchase research staff are more aware of, and utilize, data sources of a more technical nature. Within individual industries wide differences in the use of the more technical data sources occurred, as Table 10-11 shows.

Considerable variations existed among the companies with, and without, staff in the percent which used each of the data sources. Trade Newspapers and Magazines was the data source used by the largest percent of companies with staff (81%), and Publications of N.A.P.A. (National Association of Purchasing Agents) was the source used by the next largest percent (77%), while Representatives of Foreign Governments was the data source

used by the smallest percent of companies with staff (12%). In companies without staff, Vendor Sales Personnel was the data source used by the largest number of companies (64%). Publications of N.A.P.A. was the source used by the next largest percent (61%), while Publications of the United Nations was the source used by the smallest number (none used that data source).

The average number of data sources used by companies with a purchase research staff was 9.8, while in companies without staff an average of only 6.1 data sources were used.

From the above information and the data in Table 10-8, the following conclusion is indicated: Companies with a purchase research staff probably would utilize a substantially greater number of data sources in securing information necessary for purchasing research, and would be likely to employ a larger number of the more technical data sources.

Data Sources Most Useful

Companies with a purchase research staff found 1.7 times as many data sources most useful in purchasing research as were found by companies without staff. Those companies with a research staff indicated an average of 10% of the listed data sources were considered most useful, compared to 6% of the data sources in companies without staff (Table 10-8).

On all but two of the 22 listed data sources, the percent of companies with staff which considered each source most useful was as large or larger than the percent for companies without staff. Only Books on Purchasing and Publications of N.A.P.A. were considered most useful by a larger percent of companies without staff than companies with staff.

The data sources, Vendor Technical Personnel and Vendor Sales Personnel stand out as being considered most useful by a high percent of companies both with and without staff. Vendor Technical Personnel was considered most useful by 35% of the companies with staff and by 25% of the companies without staff. Vendor Sales Personnel was considered most useful by 25% of the companies in both groups. Other Departments of Your Company was also considered most useful by a high percent of companies with staff, for 26% indicated that data source as being most useful.

The average number of data sources considered most useful by companies with staff was 2.2. In companies without staff, an average of 1.4 data sources were considered most useful.

From the above information, and the data in Table 10-8, it can be concluded that companies which have a purchasing research staff probably would find a substantially larger number of data sources most useful in their purchasing research than companies without staff.

Relation Between Company Size
and Data Sources Used

The number of data sources used in purchasing research increased with company size in those companies with a research staff. Company size did not appear to affect the number of data sources used in companies without staff. Companies with staff used an average of 6.9 data sources in the smallest size category, 9.6 sources in the next size category, 9.2 sources in the next to largest category, and 11.9 data sources in the largest size category. Companies without staff used an average of six data sources in both the two smallest size categories, 5.4 sources in the next to the largest category, and 8.4 data sources in the largest size category (Table 10-9).

Relation Between Industry Classification
and Data Sources Used

In all but two of the 14 industry groups in which some companies had staff, those companies with staff used more data sources in their purchasing research than were used by companies without staff. In only Textile Mill and Apparel, and in Ordnance; Leather; Professional, Scientific, Optical; Miscellaneous Manufacturing was the average percent of data sources used in purchasing research higher in those companies without staff than in companies with staff (Table 10-10).

Table 10-9. Companies using each data source, by company size

Company Size (1959 Sales, Million Dollars)									
	Under 100		100-499		500-999		1000 & Over		
	w/	w/o	w/	w/o	w/	w/o	w/	w/o	
Number of Respondents	Staff	Staff	Staff	Staff	Staff	Staff	Staff	Staff	Staff
8	52	59	121	14	21	18	11		
Data Sources									
Books on Purchasing	38%	65%	80%	43%	57%	48%	50%	45%	
Consultants	25	8	25	10	21	5	22	9	
Corporate Annual Reports	13	19	50	34	29	38	72	36	
Other Departments of Your Company	75	58	71	52	80	48	78	73	
Public Libraries	0	0	9	5	7	5	33	27	
Purchasing Personnel in Other Companies	50	50	73	42	47	38	61	55	
Representatives of Foreign Governments	0	0	9	5	7	5	33	0	
Trade Association Personnel	13	11	31	24	36	24	72	36	
Trade Newspapers and Magazines	63	60	81	29	86	57	89	73	
U. S. Government Personnel	13	4	24	4	21	0	50	18	
Vendor Sales Personnel	63	65	78	64	64	62	78	73	
Vendor Technical Personnel	88	65	69	53	71	62	83	55	
Publications of: Foreign Governments	0	0	17	2	21	0	33	9	
N. A. P. A.	63	67	78	60	86	52	78	64	
Trade Associations	50	29	66	39	50	43	67	55	
United Nations	0	0	12	0	21	0	28	9	
U. S. Dept. of Agriculture	26	4	24	15	29	5	17	27	
U. S. Dept. of Commerce	13	17	36	18	36	5	61	18	
U. S. Dept. of Labor	13	10	19	6	21	5	61	36	
U. S. Dept. of Interior	13	4	15	6	14	0	28	27	
Universities	26	10	29	7	29	5	39	27	
Vendors	50	44	60	47	64	43	72	64	
AVERAGE PERCENT	31	27	44	27	42	25	54	38	
AVERAGE NUMBER OF TOPICS	6.9	6	9.6	6	9.2	5.4	11.9	8.4	

Table 10-10. Data sources used, by standard industrial classification

Industry	Number of Companies		Percent Using Data Sources	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	9	37	50%	30%
Transportation Equipment	17	20	37	25
Chemicals	13	20	62	31
Machinery, except Electrical	14	16	39	30
Primary Metals	10	18	40	31
Electrical Machinery, Equipment and Supplies	9	15	46	29
Paper	3	13	64	21
Crude Petroleum and Natural Gas	7	8	46	26
Fabricated Metal Products	5	10	38	19
Stone, Clay, and Glass	4	8	47	30
Textile Mill Product and Apparel	1	9	27	33
Ordinance; Leather; Professional, Scientific, Optical; Misc. Mfg.	4	5	38	40
Mining	2	5	25	19
Petroleum Refining	0	6	--	25
Rubber and Plastics	0	6	--	16
Lumber and Wood	1	4	23	12
Printing and Publishing	0	5	--	25
AVERAGE			44%	28%

The Paper industry had the highest average percent utilization of the 22 data sources in companies with staff (64%), followed by Chemicals (62%), and Food and Tobacco (50%). The industry with the smallest average percent utilization of data sources in companies with staff was Lumber and Wood (23%). Half of the industry groups, in which some companies had staff, utilized an average of 40% or more of the 22 data sources, while in only one of the 17 industry groups did companies without staff utilize an average of 40% of the data sources in purchasing research.

Table 10-11 presents, by industrial classification, the percent of companies with, and those without, staff which used each of the 22 data sources in their purchasing research. Analysis of specific data sources used, by industry classification, does show, for instance, that all companies with staff in the Paper industry and Primary Metals industry utilized the Trade Association Personnel data source. Probably this is due to the fact that these industries have strong trade associations. All the companies with staff in the Food and Tobacco industry used the Publications of the U. S. Department of Agriculture source, which can be explained by the types of commodities with which this industry deals. This table is presented primarily for the use of purchasing executives in particular industries who might wish more detailed information on the data sources used by companies in their industry.

Table 10-11. Companies utilizing each data source for purchasing research, by standard industrial classification

Industry Classification	Number Companies		Books on Purch.		Consul- tants		Corporate Annual Reports		Other Dept. in Your Company		Public Libraries	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	9	37	67%	57%	67%	11%	44%	30%	67%	51%	0%	3%
Transportation Equipment	17	20	71	60	18	5	65	15	59	50	18	5
Chemicals	13	20	77	45	31	10	69	35	85	60	46	15
Machinery, except Electrical	14	16	64	75	29	13	21	44	93	63	0	0
Primary Metals	10	18	70	56	0	6	60	44	70	50	20	6
Electrical Machinery, Equipment, and Supplies	9	15	56	67	22	20	33	47	67	53	33	20
Paper	3	13	67	31	100	8	33	23	100	54	33	15
Crude Petroleum and Natural Gas	7	8	71	50	14	0	57	0	86	50	0	13
Fabricated Metal Prod.	5	10	80	50	20	0	60	30	80	40	20	0
Stone, Clay, Glass	4	8	100	88	0	0	50	25	75	88	25	0
Textile Mill and Apparel	1	9	100	56	0	22	0	11	0	78	0	0
Ordinance; Leather; Professional, Scientific, Optical; Misc. Mfg.	4	5	25	60	0	20	25	80	75	80	25	0
Mining	2	5	50	40	0	00	50	20	0	40	0	0
Petroleum Refining	0	6	--	50	--	0	--	33	--	50	--	0
Rubber and Plastics	0	6	--	33	--	0	--	17	--	33	--	0
Lumber and Wood Products	1	4	0	50	0	0	0	50	100	25	0	0
Printing and Publishing	0	5	--	40	--	20	--	20	--	40	--	0
AVERAGE PERCENT			67%	55%	21%	9%	48%	31%	73%	54%	18%	6%

Table 10-11. Continued

Industry Classification	Purch. Personnel in Other Companies		Rep. of Foreign Gov'ts.		Trade Assoc. Personnel		Trade News-papers and Magazines		U.S. Gov't. Personnel		Vendor Sales Personnel	
	w/		w/o		w/		w/o		w/		w/o	
	Staff	w/o Staff	Staff	w/o Staff	Staff	w/o Staff	Staff	w/o Staff	Staff	w/o Staff	Staff	w/o Staff
Food and Tobacco	67%	38%	11%	0%	22%	30%	89%	65%	33%	5%	67%	70%
Transportation Equipment	65	40	6	0	35	10	65	55	24	10	65	70
Chemicals	62	55	15	10	38	30	100	60	62	5	92	75
Machinery, except Electrical	57	69	14	6	29	31	79	63	14	0	93	50
Primary Metals	80	50	10	0	40	28	80	72	0	0	70	78
Electrical Machinery, Equipment, Supplies	78	40	33	7	56	7	78	80	56	13	78	53
Paper	33	31	0	8	100	8	100	38	67	0	67	46
Crude Petroleum and Natural Gas	86	63	29	0	43	25	71	50	14	0	71	75
Fabricated Metal Products	60	30	0	10	0	10	80	30	0	0	60	40
Stone, Clay, Glass	100	38	0	0	50	0	100	75	25	0	100	75
Textile Mill and Apparel	100	56	0	0	0	44	100	44	0	0	0	67
Ordnance; Leather; Professional, Scientific, Optical; Misc. Mfg. Mining	50	60	0	20	25	20	100	80	25	40	100	80
Petroleum Refining	50	40	0	0	0	20	100	60	0	0	0	60
Rubber and Plastics	--	17	--	0	--	33	--	67	--	0	--	67
Lumber and Wood Products	--	17	--	0	--	17	--	50	--	0	--	50
Printing and Publishing	0	50	0	0	0	0	0	50	0	0	0	50
	--	60	--	0	--	20	--	60	--	0	--	60
AVERAGE PERCENT	66%	44%	12%	3%	35%	21%	81%	60%	27%	4%	74%	64%

Table10-11. Continued

Industry Classification	Vendor Tech. Per- sonnel	Publi- cations of Foreign Gov'ts.		Publi- cations of N. A. P. A.		Publi- cations of Trade Assoc.		Publi- cations of United Nations		Publi- cations of U. S. Dept. Agri.	
		w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
Food and Tobacco	67% 59	57% 55	33% 12	3% 0	89% 76	68% 45	78% 47	43% 40	33% 6	0% 0	100% 6
Transportation Equipment											
Chemicals	100	60	31	5	54	50	85	40	54	5	54
Machinery, except Electrical	93	63	7	0	86	75	57	25	0	0	0
Primary Metals	70	61	20	0	80	67	50	50	10	0	10
Electrical Machinery, Equipment, Supplies	78	67	33	0	89	67	67	27	11	0	0
Paper	67	46	33	8	67	62	100	31	33	0	100
Crude Petroleum and Natural Gas	71	50	14	0	86	75	57	38	14	0	0
Fabricated Metal Products	80	40	20	0	80	50	40	40	0	0	0
Stone, Clay, Glass	50	63	0	0	100	63	50	13	0	0	25
Textile Mill and Apparel	0	78	0	0	100	78	100	33	0	0	11
Ordinance; Leather, Professional, Scientific, Optical; Misc. Mfg.	75	60	25	0	25	60	75	80	0	0	40
Mining	0	60	0	0	100	40	50	20	0	0	50
Petroleum Refining	--	83	--	17	--	50	--	33	--	0	--
Rubber and Plastics	--	17	--	0	--	50	--	33	--	0	--
Lumber and Wood Products	100	25	0	0	100	50	100	50	0	0	0
Printing and Publishing	--	60	--	0	--	60	--	40	--	0	--
AVERAGE PERCENT	73%	57%	19%	1%	77%	61%	62%	38%	15%	0%	23%

Table 10-11. Continued

Industry Classification	Publi- cations of U S. Dept. Com.		Publi- cations of U.S. Dept. Labor		Publi- cations of U.S. Dept. Interior		Publi- cations of Univer- sities		Publi- cations of Vendors		Average Percen- tage Utilization of All Sources	
	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff	w/ Staff	w/o Staff
	22%	19%	11%	5%	11%	8%	56%	14%	67%	43%	50%	30%
Food and Tobacco	24	5	35	15	6	5	18	10	41	45	37	25
Transportation Equipment	77	30	46	15	54	15	23	5	100	45	62	31
Chemicals	14	25	7	0	0	0	14	0	71	56	39	30
Machinery, except Electrical	40	11	30	17	30	11	10	6	40	61	40	31
Primary Metals												
Electrical Machinery,												
Equipment, Supplies	44	7	44	7	0	13	33	13	33	40	46	29
Paper	100	15	33	8	33	0	33	0	100	31	64	21
Crude Petroleum and Natural Gas	29	13	29	0	29	0	57	13	86	63	46	26
Fabricated Metal Products	40	10	0	0	0	0	40	0	80	40	38	19
Stone, Clay, Glass	50	38	25	13	50	0	25	25	25	63	47	30
Textile Mill and Apparel	0	22	0	33	0	11	100	22	0	67	27	33
Ordinance; Leather; Professional,												
Scientific, Optical; Misc. Mfg.	50	40	25	0	0	0	25	0	75	60	38	40
Mining	50	0	0	0	0	0	50	0	0	20	25	19
Petroleum Refining	--	17	--	0	--	0	--	0	--	33	--	25
Rubber and Plastics	--	0	--	0	--	0	--	0	--	33	--	16
Lumber and Wood Products	0	0	0	0	0	0	0	25	100	50	23	22
Printing and Publishing	--	20	--	0	--	0	--	0	--	40	--	25
AVERAGE PERCENT	38%	17%	26%	8%	17%	6%	30%	8%	61%	47%	44%	28%

Chapter Summary

This chapter presented information on related activities performed, by purchase research staff and buying personnel, and data sources used in purchasing research, in companies with and without staff. Data for this analysis were obtained from the questionnaire sent chief purchasing executives in the 500 largest United States industrial firms. Additionally, examples of related activities performed by the purchase research staff in the 10 companies interviewed was presented to illustrate the types of activities engaged in by staff purchase research personnel. Examples were given of related activities such as the following: Parts Interchangeability Lists, Dissemination of Commodity Data, Price Break Manual, Commodity Price Book, Computation of Price Index, Preparation of Purchasing Manual, Purchase Audit, Lead Time Lists, and Administration of Purchasing Training Program.

Those companies with a purchase research staff performed 1.6 times as many of the 12 related activities as were performed by companies without staff. All 12 related activities were performed by a larger percent of companies with staff than by companies without staff. The tendency for companies with staff to perform more related activities than companies without staff held true in all but one of the 14 industry groups in which some companies had a research staff.

Companies with staff declared 2.3 times as many of the related activities were of greatest importance as were indicated by companies without staff. On all 12 related activities a higher percent of companies with staff declared the activity of greatest importance than was declared by companies without staff.

The number of related activities performed increased with increased company size in companies with staff. Company size did not seem to affect the number of related activities performed by companies without staff.

Those related activities performed solely by the purchase research staff were ranked only slightly higher in importance than the activities performed solely by buying personnel. Fourteen percent of related activities performed solely by the research staff were declared of greatest importance, compared to only 13% of activities performed solely by buying personnel.

The purchase research staff was heavily involved in related activities performed in companies with staff. The research staff alone performed 52% of the related activities performed in companies with staff, and was involved in 67% of those related activities performed. The staff alone performed an average of 3.6 related activities, and was involved in an average of 4.6 related activities. Thus it

can be concluded that when a research staff is present, that staff probably would become involved in a substantial amount of work of other than a fact-finding, investigative, research nature.

The buyer was involved in more related activities in companies without a research staff. An average of 4.2 related activities were performed by the buyer in companies without staff, but only 3.4 related activities in companies with staff. This indicates that the presence of a research staff does tend to relieve the buyer of the performance of some related activities, permitting him to concentrate more fully on his actual buying duties.

Companies with a purchase research staff used 1.6 times more data sources in their purchasing research than companies without staff. An average of 9.8 data sources was used by companies with staff; only 6.1 sources were used by companies without staff. Companies with a research staff also used a larger number of the more technical data sources.

Companies with research staff also considered 1.7 times more data sources most useful than was considered by companies without staff. An average of 2.2 data sources was rated as most useful by companies with staff, compared to 1.4 data sources by companies without staff.

The number of data sources used in purchasing research increased with increased company size in companies with staff, but not in companies without staff.

In all but two of the 14 industrial classifications in which some companies had staff, the average percent utilization of data sources was larger in companies with staff than in those without staff.

CHAPTER XI

ADMINISTRATION OF PURCHASING RESEARCH

Introduction

This chapter presents illustrations of practices and procedures used in the administration of the staff purchasing function in the interviewed companies.

An attempt was made during the interviews to secure information on the specific purchasing research administrative practices in each company, such as: (1) the initiation of research studies, (2) the scheduling of research work, (3) the report of findings at the completion of research projects, (4) the follow-up made of completed research projects, (5) the budgeting and accounting for the expenses of purchasing research, and (6) the method used to evaluate the results of staff purchasing research effort.

The information obtained by the interviews is summarized at the beginning of this chapter and is followed by a description of the staff purchase research administrative practices in six of the interviewed companies. These descriptions of administrative practices in specific companies are intended only as illustrations. The reader should keep in mind that only a small number of firms were interviewed in this study; thus the data on staff purchase research administration are

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not necessarily representative of the 500 largest United States industrial firms.

Initiation of Research Projects

In the companies interviewed, specific purchase research projects could be initiated by personnel from any functional area of a company, but in practice, the majority of projects were conceived by people within purchasing. Specific projects on the Purchased Materials, Products or Services category of topics, but excluding the Commodity Study; Supply, Demand, and Price Forecast topics, were initiated usually by buying personnel. Since staff research personnel frequently were not associated closely with actual buying operations, they frequently had to rely on the buying personnel to recognize the need for study on specific items purchased.

Specific projects in the other research topics, and particularly the Commodity Study topic and the Purchasing System topics, normally were initiated by the research staff or by the purchasing manager. Since these types of projects often affected several plants or divisions within a firm, they normally were initiated by some individual in a position to see the over-all picture of purchasing's responsibilities.

Scheduling of Research Work

Although the purchase research manager normally scheduled the work within his section, the purchasing manager exercised

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much influence over the scheduling of research work. Frequently the purchasing manager approved proposed work priorities, and in almost all cases his approval had to be obtained before any extensive projects were undertaken. Such close supervision over the scheduling of work of the research personnel might have been due, in part, to the relative newness of the staff purchasing research activity within the purchasing organization. In most of the companies interviewed, the staff purchase research function had been in existence for less than ten years.

Reports of Staff Research Work

Formal reporting systems for results of specific research were not extensively used. Only three of the companies used a formal reporting system. These three reporting systems consisted of appropriate forms on which to record progress on particular projects and to detail cost savings at the completion of successful projects. In only two categories of topics--Purchased Materials, Products, or Services; and the Purchasing System--did the three companies use these formal reporting systems.

In all firms, at the completion of a specific research project, a report, taking various formats, was made to the purchasing manager, presenting results of the research effort, and recommendations resulting from the research. Frequently these reports were made by an office memorandum.

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Summary reports regarding research accomplishments and research plans were made by the research personnel in all companies interviewed. Normally these reports were made to the purchasing manager, but in some cases copies of these reports were furnished higher management within the company. There was no standard format for such reports, although they normally summarized the work that had been completed during the period; projects which were currently under study; and, in the case of those reports made yearly, indicated the work anticipated in the succeeding year. Summary reports were made monthly in several of the companies and yearly in most of the companies.

Follow-up of Recommendations

A follow-up of results of research recommendations was made by the purchase research staff in all but one of the ten companies interviewed. These follow-ups were made to determine the outcome of recommendations which had been accepted, and to assist in resolving difficulties which might have arisen in instituting the recommendations.

Whenever there were difficulties in securing cooperation of operating or buying personnel, these matters were referred to the purchasing manager, for his decision and action. The staff purchasing research personnel did in fact operate in a staff capacity, and had no direct authority to compel compliance with their recommendations.

Budgeting and Accounting

Few of the companies prepared a budget for the staff purchasing research function, or determined the costs of completing specific research projects.

The purchase research manager participated in preparation of a budget for purchasing research in only two of the companies interviewed. This partially was because the major expense in the research programs of most companies was the salaries of the research personnel, which could be determined readily. The two firms in which the research managers prepared a budget were both companies in which one of the major activities was that of arranging and/or conducting training sessions, and preparation of necessary text materials.

Attempts at the determination of detailed costs of completing specific projects were not made in any of the companies. The feeling was expressed by several of the purchase research managers that attempts to "cost out" specific research projects could not be done in any meaningful manner, and that the total research costs, and benefits, must be considered if meaningful expense data were to be produced. In all but one of the companies interviewed, total research expenses were charged to general purchasing administration expense, due to the difficulty of determining the amount of expense which would apply to a specific division or department. The one company which

did distribute costs of the total research effort based it on the relative dollar amounts of purchases of the various divisions, but recognized this was a somewhat arbitrary method of allocation.

Evaluation of Benefits

Formal attempts at a dollar evaluation of the benefits of staff purchase research work were made primarily on topics researched in the Purchased Materials, Products, or Services category (and excluding the Commodity Study; Supply, Demand, Price Forecast; and Tariff topics) and the Purchasing System category. These dollar evaluations normally attempted to determine the amount of savings which resulted from the purchase of a different material, or from use of a different method of purchasing. For example, in the case of a material substitution, the computation would be made by subtracting the new purchase cost per item from the old purchase cost, and then multiplying this difference by a normal, annual usage. The amount of saving was usually computed for only a one-year time period, because it was assumed that changes resulting in savings became standard practice after one year.

In the interviewed companies, no attempt was made to evaluate, in a quantitative manner, the benefits received from other types of purchasing research, such as research on Vendors, or on Commodity Study; Supply, Demand, or Price Forecast; or Tariff topics.

Purchase Research Administration in Specific Companies

This section presents a discussion of the administrative practices used in the staff purchase research function in six of the ten companies with staff which were interviewed. In some cases, exhibits of specific forms used in the administrative procedures are included. The six companies are identified as company A through F. However, in order to maintain company anonymity, these company designations bear no relation to other similar individual company designations used in other chapters of this study.

1. Company A

Company A's purchasing function was decentralized by major plants although certain controls were maintained by the central office purchasing department. The staff purchase research function was located in the central office purchasing department.

All purchasing personnel within the company were encouraged to initiate research projects. However, the majority of projects were conceived by the staff purchase research personnel. According to the research manager, ". . . over ninety percent of the ideas we work on, and which result in cost savings, are initiated by the Purchasing Research Section itself. For instance, when I was an Analyst, I used to frequently pick up a stack of drawings of high dollar value items and go

through the drawings asking questions regarding why it was made the way it was, why it had the particular features it had, and why it was made of the particular material it was."

The research manager's approval was necessary before an analyst started work on a particular project. This was an informal approval, primarily for the purpose of establishing work priorities, for according to the research manager, the Analyst "normally juggles about 16 balls at once." The researchers within the department did not specialize, either by type of research project or by company division, although if a particular researcher had special knowledge on a particular topic or topics, an attempt was made to assign this type of project to him. In this company, each researcher was expected to handle the complete research on a project, with such advice of others as he might request.

A complete record was maintained on all research projects, through use of a "Purchase Research and Analysis Project Report" (Exhibit 11-1), which was prepared when a project was initiated. This report stated the objectives of the project, the methods of research to be used, and anticipated savings. It was made in three copies: one for the research manager, one for the company's chief purchasing executive, and one retained by the researcher. Each initial report on a new project was assigned a project number, and every time a major new development occurred in the research on this project, the same form,

EXHIBIT 11-1

PURCHASE RESEARCH AND ANALYSIS PROJECT REPORT

Project No. _____

Project Title: _____ Date: Started _____

Date: Completed _____

*Annual Savings: 1. _____ Assigned To: _____

2. _____

Division(s) Affected: _____

PROJECT DESCRIPTION AND OBJECTIVE

STATUS REPORT

Date |

- *1. Initial Estimate--Start of Project
- 2. Actual--Project Completion

with the same distribution, was made. These reports, maintained in chronological order, thus gave a complete history on the progress of a particular project. Several files on particularly lengthy projects were over fifty pages in length.

Projects were closed with the completion of another copy of the "Purchase Research and Analysis Project Report." In order for a project to be considered completed, the researcher had to arrive at a recommendation showing benefit to the company, or else to have found no feasible or beneficial solution to the problem under study. Once a favorable recommendation was reached, it was communicated to plant purchasing personnel for their action. For a project to be considered favorably closed, the recommendation had to have been accepted by the plant, and the researcher had to have received a report from the plant showing the purchase order effecting the change recommended by the researcher, the quantity bought, shipment date, and a satisfactory inspection report on the material. A follow-up of favorable recommendations which did not appear to have been accepted by the applicable plant was made by the chief purchasing executive.

Each researcher prepared a monthly summary report for the research manager and the chief purchasing executive on the status of all open projects, and the results of all projects completed that month. Also, the Purchasing Research Section

prepared an annual "Cost Reduction Record," detailing their activities, which the chief purchasing executive then presented at a meeting of the Corporate Operating Committee. This annual report was started in 1958, in which year \$289,000 in savings were accomplished through staff purchasing research projects; in 1959 the savings were \$473,000. The total amount of savings was broken down by month, and by person performing the research.

Evaluation of benefits from purchasing research was based on the difference between the price paid as a result of the research and that previously paid, multiplied by current annual usage. The total savings on any project were based on only the next 12 months' usage, as supplied by either production control or purchasing. In the case of an item which was transferred from one of the company's manufacturing facilities to a vendor, the amount of savings was considered to be the difference between vendor price and the company's out-of-pocket cost to the manufacture. Overhead costs were not included in the calculation. No formal report of purchasing research savings was made for general distribution, since it was felt the operating people might resent such claims, and feel that the purchasing research people, "are only blowing their own horns."

The expenses of the Purchasing Research Section were included in the over-all purchasing administration budget. No attempt

was made to compute or assign research costs to specific projects, or to establish specific dollar cost reduction goals for the Purchasing Research Section.

2. Company B

In Company B, the purchasing function was largely centralized within the home office, although a few purchasing personnel were located in branch plants. The staff purchasing research personnel were located at the home office.

Projects were initiated by purchasing management or by the purchase research staff. Projects initiated by the staff arose from three principal information sources: (1) literature, in the form of sales brochures or trade magazines read by the researcher (40% to 50% of projects arose from this source); (2) literature, or information, received by personnel outside the purchasing area, such as the operating departments or research and development, and forwarded to the researcher as something "to look into"; and (3) conversations with sales personnel calling on the company.

Informal approval of specific projects was obtained from the purchasing manager. Estimates of research costs and potential benefits from proposed projects were presented to the manager only in the case of projects for which much assistance and support from other departments within the company would be required. The purchasing manager determined the

over-all priority of research projects, but the specific research schedule was determined by the research manager who stated: "The priority in which different projects are done is a matter of timing, depending on production requirements, problems in data collection, and the personnel involved. The potential savings, some of which are quite apparent, also helps determine the order in which projects are pursued."

Each project aimed at a specific cost reduction was assigned a research project number. On-going projects, such as one on personnel staffing requirements, were not assigned project numbers since there was no anticipated completion date for such projects. File folders were maintained, by project number, for each project. Each folder contained complete information on data gathered, estimates made, and reports made. Additionally, a loose-leaf notebook was maintained containing information, chronologically, on all projects which had been initiated. In over four years of activity, 121 projects had received a file number, of which 26 were still active. A project was considered closed when the recommendation had been accepted; when it appeared that, for good cause, the recommendation could not be accepted; or when it was determined that the results of the project would be of no significant benefit to the company. Before a project was considered closed, an informal follow-up was made by purchasing research of all

projects on which a favorable recommendation was reached. When resistance on the part of operating personnel to a favorable recommendation was found, this matter was referred to the purchasing manager, for his action.

A letter to the purchasing manager was necessary to close a particular project file. This presented recommendations and an estimate of dollar savings, "whenever this could be done, conservatively, pegged to the dollar differences." Additionally, every six months, the purchase research staff prepared a summary report for purchasing management on the status of all active projects.

No summary report was made of the total annual dollar savings resulting from the work of purchasing research, for it was felt these savings resulted from the combined effort of several departments, and it would be inaccurate to attribute these savings solely to the work of the purchasing research staff. It also was indicated by the purchasing manager that these savings were on a diminishing basis, for, "It was pretty simple to get the easy situations and come up with sizeable savings, which we have already done. However, the more involved problems take longer, and the results are a bit more problematical."

The cost of the staff purchasing research activity, consisting almost entirely of salaries, was budgeted in the over-all purchasing administrative budget.

3. Company C

Company C operated a large number of plants. Each division of the corporation had its own purchasing staff, but large dollar value and heavy use items, required by more than one division, were purchased by the headquarters purchasing office. The majority of the time of the purchase research section, located in the headquarters purchasing office, was spent in research of an economic nature (Commodity Studies; Demand, Supply, and Price Forecasts; Tariff Studies).

A large number of the research projects were initiated by the purchasing manager. Perhaps 10% of the projects were initiated by purchasing personnel, either in the headquarters office or in one of the divisions or plants. "Request work" of this nature was given top priority in the scheduling of work. Perhaps 20% of the work was initiated by the research manager himself, with informal approval of the purchasing manager. The research manager was attempting to increase the percentage of projects which he initiated, for he strongly felt the need for research in some areas which were not being researched. As a basis for determining which new materials could be most profitably studied, the company rated each raw material on 14 criteria, as shown by Exhibit 11-2. Each raw material was given a point rating on each of these 14 criteria and a summation of these point ratings was used as a basis for the selection

EXHIBIT 11-2

INDICATORS FOR NEED OF PURCHASE ANALYSIS PROJECT

<u>GROUP & NO.</u>	<u>CRITERIA</u>
A. <u>Value</u>	
1. Top Dollar (Current or Future)	
B. <u>Product Profitability</u>	
2. Red Dollar	
C. <u>Buying Position</u>	
3. This Company a Substantial Buyer	
D. <u>Price/Cost Characteristics</u>	
4. Infrequent Price Changes	
5. Frequent or Seasonal Price Changes	
6. Cost Not Competitive	
7. Divergent and Unfavorable Product Price/Raw Material Cost Trend	
8. High Unit Cost	
E. <u>Availability</u>	
9. Imports as Percent of Industry Supply	
10. Limited Suppliers	
11. New Suppliers Adding to Market	
12. Availability Limited	
13. Make vs. Buy	
F. <u>Quality</u>	
14. Have Had Quality or Specifications Problems	

of those raw materials to be studied which offered the largest potential benefit to the company. No attempt was made to estimate potential dollar costs and savings on proposed projects, except intuitively.

The research manager scheduled the work of the department, and submitted this schedule to the purchasing manager for his approval. Very little close supervision was exercised over the work of the research personnel, due to its very specialized nature. Within the research section, there was some specialization of work, for the research manager made all price forecasts, including those used in commodity studies made by others in the purchase research section.

Upon completion of a particular project or study, a report was made to the manager of purchases, with distribution to other interested individuals. In addition, the research manager furnished the purchasing manager a monthly one-page summary report of all projects currently under study.

The research section followed up all completed projects, to determine results and to assist in resolving any problems which had arisen.

No formal evaluation was made of the dollar benefits accruing to the organization as a result of the work performed by purchasing research. It was felt that it would be fruitless to attempt a dollar and cents evaluation of work of this nature, and

that the only way to evaluate the worth of this type of purchasing research was to query people in the buying groups as to whether these efforts furnished them worth-while information.

The expenses of the purchasing research section, which consisted largely of salaries, were included as a part of the purchasing administrative budget. No attempt was made to determine the costs connected with particular projects or types of projects. At the beginning of the 1960 budget year, consideration was given to charging the expenses of purchasing research to the various operating divisions, based on time spent for each division, but it was decided to continue charging these expenses to general purchasing administration.

4. Company D

Company D's purchasing function was partially decentralized, for each major product division had its own purchasing organization. Major items used by several divisions were purchased by the general office purchasing department, although corporate purchasing responsibility for some common use items was assigned to a particular division, when it was felt that division was in an advantageous position to buy a particular item. The purchasing research department was located in the general office.

The manager of the research function had the authority to initiate any projects which he felt were needed and worth-while, although normally such projects were discussed with the purchasing

manager, and his approval obtained, before major effort was expended. The purchasing manager also initiated some projects, and frequently people within the buying organizations requested the assistance of the staff purchase research personnel on projects of a value analysis nature.

Scheduling of work within the department was done by the research manager, who assigned informal priorities based on his analysis of the urgency of particular projects, as measured by the relative savings potentials. The personnel within the purchase research section specialized by broad subject areas, and were assumed to be capable of completing projects in their particular subject area with a minimum of supervision.

All projects were summarized at their conclusion, with statements on the objective of the project, methods which were utilized in doing the research, conclusions, and recommendations. Distribution of this report depended on the subject matter. Frequently, reports were directed to personnel within the buying organization, although a copy of such reports was always furnished the purchasing manager. Follow-up of projects was always made to determine if recommendations had been complied with. Frequently this follow-up took the form of discussions between the research manager and the appropriate buying personnel. Assistant purchasing managers also completed summary sheets at monthly intervals, giving the status of purchasing research

recommendations which pertained to their area of responsibility. It was indicated that the purchase manager also followed-up purchase research recommendations directly with the appropriate purchasing personnel.

Purchasing research personnel administered, and frequently performed research on, specific projects in the company's "Cost Reduction Program." Whenever opportunities to effect a cost reduction were recognized by buying personnel, a "Plan of Research (Exhibit 11-3) was prepared and forwarded to the purchase research section. Each time major new developments occurred on a particular project, a similar report was completed. All reports on a particular project were filed together, and assigned a common project number. This same form was used to close a project. Additionally, at the completion of a project in which favorable recommendations were made, a "Report of Savings" form (Exhibit 11-4) was completed. This report showed the annual amount of savings effected from the project.

The purchase research manager prepared a quarterly report to the purchasing manager on the status of all outstanding cost-reduction projects, plus the total amount of savings accomplished in that quarter. This was the only regular summary report on purchasing research activities which was made by the research manager. Only results of research efforts connected with the company's cost reduction program were subject to a

EXHIBIT 11-3

PLAN OF RESEARCH

Originator
Date Submitted
P.A. Approval
Project No.

THE PROBLEM:

PROPOSED SOLUTION

BENEFITS EXPECTED:

(Indicate types of benefits, possible amount, and specific location where benefits will be realized)

PLAN OF RESEARCH TO DEVELOP SOLUTION:

PURCHASING RESEARCH ASSISTANCE REQUESTED TO:

Participate in planning and/or development of project
(Consult w/ buyer).

Develop following information (be specific):

EXHIBIT 11-4

REPORT OF SAVINGS

TO: _____ REPORT NO. _____

Date: _____ Buyer: _____

1. Purchase requirement on which savings were effected:

a. Commodity _____

b. Order or contract identification

(1) Date of issuance: _____

(2) Number of Order or contracting party: _____

2. Evaluation of savings (attach any computations previously prepared)

a. Element of cost reduced: _____

b. Base amount of cost element per unit of purchase: _____

c. Changed amount of cost element per unit of purchase: _____

d. Cost reduction per unit of purchases: _____

e. Estimated annual number of units on which savings to be realized: _____

f. Number of units on which savings realized to date: _____

(Note: Where no standard unit of purchase is involved, show only total dollar amount in 2b, c, d, e, and f.

3. Description of how savings were made, including Purchasing's participations:

dollar evaluation. It was felt that attempts to assign dollar values to benefits from research in areas other than the Purchased Materials, Products, or Services category would not justify the effort expended.

Efforts recently were made to establish dollar goals for cost reduction efforts, by buying groups. This plan, which at the time of this study was awaiting approval, established cost-reduction objectives which were based on the dollar amount of purchases of each buying group, times an annual improvement factor (in most cases, between 2% and 3%). Since plant operating personnel had been given such an improvement goal, it was felt realistic to establish similar goals for purchasing personnel.

Purchasing research expenses, made up largely of the salaries of the personnel involved, were included within the over-all budget for the purchasing administrative group. No attempt was made to determine the cost of completing any specific research projects.

5. Company E

Company E's purchasing function was centralized in one location, where almost all decisions regarding selection of vendors and price were made. The staff purchase research group was located at this central purchasing office.

Research projects were initiated largely by the purchasing manager or the research manager, although persons within the

buying organization, research and development, and engineering were encouraged to suggest areas where purchasing research might be able to effect dollar savings. The scheduling of research work was done by the research manager, although the purchasing manager had to give specific approval for any market studies or vendor studies which would require substantial amounts of time.

On completion of a research project, a follow-up always was made, to determine if the recommendations had been accepted, and to help solve any problems which had arisen. The research manager indicated that occasionally he and other staff research personnel had to be careful not to appear too aggressive in attempting to assure that their recommendations were accepted.

Upon completion of a research project, the results were always reported to the purchasing manager. This report also was sent to any other individuals who might be interested in the specific study. Monthly, the research manager prepared a three-page progress report for the purchasing manager, which summarized all projects which had been concluded in that month. In addition, a yearly summary of projects and recommendations was prepared, which included statements of work planned for the forthcoming year.

A separate budget for the staff purchasing research function was prepared by the research manager each year, which included

amounts for salary, purchasing training courses, books, and travel.

A formal evaluation of dollar benefits was made only for projects in the Purchased Materials, Products, or Services category where a determination could be made between total dollars saved annually due to the adoption of a changed material or method. Much of the work of this purchase research group involved investigation of potential supply sources for materials being considered for incorporation into new products suggested by the corporate research and development departments. Frequently the result of a purchasing research project was a recommendation that an adequate supply of the needed material was not available and would not be available, at a reasonable price. It was felt impossible to assign a dollar worth to such projects. However, in the case of projects which involved long and complex studies of commodities, an evaluation of the worth of this activity was made by approximating what the research study would have cost the firm if it had been purchased from an outside research agency. Evaluations of this nature were made only for the internal knowledge of purchasing personnel, and were not made a part of any formal report.

6. Company F

Company F's purchasing function was decentralized, for each division maintained its own purchasing organization. The staff

purchasing research organization, located at company headquarters, served all the individual purchasing organizations within the corporation.

Research projects were initiated largely by personnel within the operating plants, or by higher company management. Nevertheless, personnel within the staff purchasing research department were encouraged to, and frequently did, initiate studies whenever they saw an area in which research might produce a significant benefit for the company. Approval for work on all research projects had to be obtained from the purchase research manager before any substantial effort was expended.

Reports of research activities accomplished, and those planned for the near future, were made quarterly and annually to the chief purchasing executive.

At the beginning of each year, the research manager prepared a budget request for the operation of his department, covering salaries, travel and telephone expenses, text material development, and expenses of training programs operated by his department. The total expenses of the staff purchasing research activity were assessed against each of the company's plants, based upon the volume of purchases of each plant. This method of cost allocation was determined by the research manager and the accounting personnel as the most equitable and usable of the possible methods available.

No attempt was made to calculate dollar value of benefits to the company from the staff purchasing research effort. It was felt that many of the benefits of staff purchasing research activity were of such a nature that meaningful dollar evaluations were not possible. Some of the projects accomplished by the group, such as establishment of pool buying arrangements to take advantage of quantity discounts, would be susceptible to a dollar evaluation of benefits, but this company felt that such evaluations were not necessary.

Chapter Summary

This chapter presented a summary of the practices and procedures used in administration of the staff purchasing research function in the ten companies with staff which were interviewed. Following this summary, a description was presented of the staff purchasing research administrative practices in six of the ten companies interviewed. All of the data on purchasing research administrative practices were obtained from the companies interviewed. Because the group of companies interviewed was small, the administrative practices used are not necessarily representative of the 500 largest United States industrial firms.

All of the interviewed companies had established some type of system for administration of the staff purchase research function. However, the number and complexity of administrative procedures varied widely between companies.

Purchasing research projects normally were initiated by personnel within the purchasing function, and often by the staff research personnel themselves. However, personnel in other departments, such as engineering and research and development, occasionally provided the impetus for particular projects. The buyer frequently initiated projects on specific materials purchased. Projects of an economic nature, and topics in the Purchasing System category, normally were initiated by the purchasing manager or the research staff.

The scheduling of work within the purchase research section was normally done by the research manager, although frequently the purchasing manager had to approve the research schedule.

Formal reporting systems for progress of staff purchase research work were not used by all companies, however, in some of the companies special forms were used for the reporting of research progress and results. In all firms, a report was made to the purchasing manager at the completion of each specific research project. Summary reports of staff purchasing research activities also were made to the purchasing manager in all companies. In some companies special forms were used for the reporting of research progress and results. In all firms, a report was made to the purchasing manager at the completion of each specific research project. Summary reports of staff purchasing research activities also were made to the purchasing manager in all companies.

In some companies these summary reports were made monthly, and in many companies a yearly summary report also was prepared.

In all but one of the ten companies a follow-up was made by the purchase research staff after completion of a particular research project, to determine the success of recommendations made and to assist in resolving any difficulties. Whenever resistance to recommendations was encountered, this matter was referred to the purchasing manager.

Few of the companies prepared a special budget for the staff purchasing research function. Normally the purchasing research function was included in the general purchasing administrative budget. None of the companies attempted to determine the cost of performing specific research projects. In all but one company, the total purchasing research expense was charged to general purchasing administrative expense.

Formal attempts at dollar evaluations of the benefits of the staff purchasing research efforts were made primarily on projects in the Purchased Materials, Products, or Services category (excluding topics in the commodity study area), and projects in the Purchasing System category. None of the companies attempted dollar evaluations of benefits from Research on Vendors or on Commodity Study; Supply, Demand, and Price Forecast types of projects.

CHAPTER XII

STAFF PURCHASING RESEARCH PERSONNEL

Introduction

Based on the personal interviews conducted in ten companies which had a purchase research staff, information is presented on the educational background, work experience, and compensation of staff purchase research personnel. Thirty-one persons in the general position categories of purchase researcher and purchase research supervisor were interviewed. These did not represent all the purchasing research personnel in the interviewed companies. Some individuals were not available for interview, because they were on vacation or on temporary or permanent assignment at some other company location. No attempt was made in the questionnaire to obtain information on the background and compensation of staff purchase research personnel.

Wide differences existed in qualifications of these personnel, both within a given company and between companies. These differences were due partly to the type of research engaged in by these personnel. For instance, within a given company a researcher often specialized in only certain research topics.

The background and compensation of the two major categories of research personnel, purchase researcher and research

supervisor, are discussed separately in the first two sections of this chapter, and examples of job descriptions for these positions are given. The third section of this chapter presents the opinions of personnel in the companies interviewed regarding desirable qualifications for persons employed in a staff purchasing research capacity. The data on the staff purchase research personnel in the ten companies interviewed may or may not be representative of staff purchase research personnel employed in major industrial firms.

The Purchase Research Supervisor

A purchase research supervisor was considered to be an individual responsible for directing the work of one or more full-time purchase researchers. In the majority of the eight companies which had an individual in such a supervisory capacity, the research supervisor himself performed work of a fact-finding, research nature, in addition to supervising the work of one or more subordinates. In only three of the eight companies which had a supervisor did the supervisor function primarily as an administrator, assigning and reviewing the research accomplished, without actually becoming directly involved in any of the specifics of particular research projects. The two companies which did not have a purchase research supervisor were not necessarily concerned utilizing only one full-time

staff research individual.

1. Titles

A variety of titles were used for the position of the purchase research supervisor. In the three companies in which the research supervisor functioned almost exclusively as an administrator and did not become involved in specific research projects, his title contained the word "manager." The titles of these three positions were: Manager, Purchase Research and Analysis; Manager-Purchasing Research; and Manager-Purchasing Research. In those five companies in which the supervisor spent the majority of his time engaged in actual research activity, the titles were: Staff Assistant, Purchasing Research; Purchasing Research Analyst; Engineer in Charge, Value Analysis; Raw Material Analyst; and Manager, Purchase Research. Job descriptions for two of the purchase research supervisor positions are included as Appendix 3-1 and 3-2.

2. Education

All but two of the eight purchase research supervisors were college graduates. The two who were not college graduates both had had from two to three years of college, one in business administration and the other in mechanical engineering. Of those six research supervisors who had completed college,

two had a bachelor's degree in mechanical engineering, one a bachelor's degree in business administration, one a bachelor's degree in public and international affairs, one a bachelor's and master's degree in agricultural economics, and one a bachelor's degree in chemical engineering and a master's degree in business administration. From this very limited number of examples, it would appear that purchase research supervisors were a well-educated group, with the primary educational background being in the areas of business administration and engineering.

3. Work Experience

The eight purchase research supervisors had occupied their present supervisory position for an average of two years (Table 12-1). The average years of service with their present company was slightly over 11. A partial explanation for the seemingly small number of years in which the supervisors had held their present position was the relative newness of staff purchase research positions in some of these industrial firms. In one of the firms, the purchase research supervisor assumed his present position when the purchase research function was first established, in 1959. In at least three of the companies, the present research supervisor was only the second individual to hold the position.

Co.	No. years		No. years in present supervisory position	No. years with present company	Purchasing experience, prior to present position		Experience other than purchasing	
1	1			8	3 yrs. expediting, 4 years buying, this company	None		
2	2			5	3 yrs. as purchase analyst, this company	7 years engineering experience, another company		
3	9 mo.			12	None	11 yrs. engineering experience, this company		
4	4			4	None	8 yrs. as commodity specialist in marketing research dept., another company		
5	2			9	None	3 yrs. as research chemist, another company; six yrs. in production, 1 year in market research, this company		
6	2			11	3 yrs. as staff assistant, purchasing research, this company	2 yrs. as statistician, another company; 6 yrs. in cost and statistics section of accounting dept., this company		
7	5			30	2 yrs. commodity specialist in purchasing research, 7 yrs. plant materials manager, 11 yrs. as buyer or purchasing manager, this company	5 yrs. in accounting, this company		
8	1			10	10 yrs. as buyer and expediter, another company, 9 yrs. as buyer, this company	None		

Members of top purchasing management had been promoted from the position of purchase research supervisor in two of the companies. In one of these companies, the Chief Purchasing Agent was formerly the purchase research supervisor; in the other company the Assistant Purchasing Manager formerly headed the purchase research function. This indicates that purchasing research experience may give an individual the breadth of knowledge needed to assume higher managerial positions within purchasing.

In three companies the research supervisor was promoted to his present position from a subordinate staff purchasing research position. In two other companies the individuals occupying the position of research supervisor held positions in marketing research prior to their present position.

Only three of the eight supervisors had experience as a buyer. This indicates that in the companies interviewed, the majority did not consider actual purchasing experience a prerequisite for the job of managing the purchase research function.

4. Compensation

Wide variation existed in the salaries of this small sample of purchase research supervisors. The lowest indicated annual salary range for the position of research supervisor was from \$10,000 to \$12,500; the highest range was from \$27,000 to \$36,000.

The average salary of the eight research supervisors was slightly under \$15,000 a year. These salary figures were adjusted upward in each company to reflect the value of fringe benefits received (pension, bonus, insurance, etc.) based on information from the appropriate company accounting department. It should be remembered that these eight companies varied widely in size, location, and type of industry. Also, there was considerable variation in the scope of the research function which each man supervised.

The Purchase Researcher

Twenty-three individuals doing work of a non-buying, fact-finding, research nature within the purchasing department were interviewed. None of these 23 individuals supervised the work of other purchase researchers. Some of these purchase researchers performed work on several research topics, while others worked on only one general type of topic, such as preparation of intermediate and long-run supply; demand, and price forecasts for purchased materials. Five of the 23 researchers reported to some member of purchasing management (three to the chief purchasing executive, and the other two to a subordinate manager within the purchasing department). The other 18 individuals reported to a purchase research supervisor.

1. Titles

A wide variety of titles were used for the individuals doing purchasing research. Several of those interviewed had the term "analyst" as part of their title, such as Purchasing Analyst, Purchase Research Analyst, Raw Materials Analyst, or Value Analyst. Exhibit 12-1 indicates the 20 job titles used. Job descriptions for two of these positions also are included (Appendix 3-3 and 3-4). The job descriptions have been modified, as necessary, to preserve the anonymity of the company.

2. Education

The average level of educational achievement of the individuals in the position of purchase researcher was high. Of the 23 individuals interviewed, 18, or over three-fourths, were college graduates (Table 12-2). Five individuals, over 20% of the total group, held master's degrees. Of the five individuals who were not college graduates, three had attended college. The two individuals who had no college work were both in the same company. One had been with the company 18 years, the other for seven years.

There does not appear to be any consistent pattern to the educational backgrounds of purchase researchers, although of the six researchers whose work was almost entirely on topics in

Exhibit 12-1. Titles of purchase researchers

Purchase Analyst (2)

Purchasing Analyst (2)

Consultant - Economic Analysis

Assistant Purchasing Research Analyst

Analyst - Paper, Lumber, and Textiles

Analyst - Purchased Products and Services Costs

Analyst - Ferrous Metals

Analyst - Transportation Research

Value Analyst

Assistant Raw Materials Analyst

Analyst - Purchasing Training and Education

Value Engineer

Plant Liaison Manager

Analyst - Purchasing Surveys and Practices

Staff Assistant - Operations

Assistant to the Director of Procurement

Staff Assistant - Purchasing Research (2)

Analyst - Purchasing Techniques Research

Analyst - Equipment and Facilities

Assistant Manager, Purchasing Research

Table 12-2. Educational background of 23 purchase researchers

Education	Major				Total
	Acctg.	Bus. Adm.	Economics	Engineering	Other
Master's Degree		1	4		5
Bachelor's Degree	2	2	3	5	6 ^a
Attended College, but did not graduate				2	1 ^b
High School only					2

^aOne each in chemistry, journalism, liberal arts, political science, social science, and geology.

^bLiberal arts.

the Purchased Materials, Products, or Services category (excluding the Commodity Study and Supply, Demand, or Price Forecast topics) all but one had an engineering educational background. Three of these researchers had degrees in engineering, two had taken engineering in college but not graduated, and one had a degree in accounting. Of the three researchers doing work almost solely on the Commodity Study, and Supply, Demand, or Price Forecast topics, two had educational backgrounds in economics. One of these three researchers had a bachelor's degree in accounting and a master's in agricultural economics; another held a bachelor's degree in economics and a master's in economic history; while the third individual had a bachelor's degree in chemistry, and was taking graduate work in business administration.

3. Work Experience

The average number of years in purchasing research work for the 23 researchers was slightly over two (Table 12-3). Only one individual had been in purchasing research work as long as seven years; one individual had been in this work for six years; two for five years; two for four years; and four had been in purchasing research work for three years. Ten of the researchers had been in purchasing research for one year or less. The large number of individuals with relatively few

Table 12-3. Experience of 23 purchase researchers

Position number	No. years in purc. res.	No. years with present co.	Purchasing experience	Experience other than purchasing, with latest experience listed first
1	3	3	Subcontract adminis- tration & capital equip. procurement w/ another co.	None
2	1	1	19 yrs. w/ another co. in variety of buying jobs	None
3	1	9	8 yrs. this co. in construction pur. & plant P.A.; 15 yrs. w/ another co., as pur- chasing specialist working on cost type contracts	None
4	6	12	6 yrs., this co., buyer of office equip. & supplies	None
5	6 mos.	4	None	3 yrs. finance and marketing, this co.; 7 yrs. in credit mgt. with another firm
6	4	18	9 yrs., this co. as govt. contract adminis- trator & cost analyst	5 yrs. accounting, this co., 22 yrs. experience in banking
7	1	7	None	6 yrs. as transportation rate analyst, this co.; traffic experience with other cos.

Table 12-3 (Continued).

Position number	No. years in purc. res.	No. years with present co.	Purchasing experience	Experience other than purchasing, with latest experience listed first
8	6 mos.	19	None	18 yrs., new products engineering, this co.
9	6 mos.	23	6 yrs. purchasing, this co., as govt. contract administrator	10 yrs. engineering, 6 yrs. sales, this co.
10	2	9	None	7 yrs. methods engineering, this co.
11	1	10	None	9 yrs. accounting, this co.
12	unknown	unknown	None	Public relations, this co; newspaper editor
13	3 mos.	unknown	None	Cost and statistics section of accounting dept., this co.
14	5	11	6 yrs. as buyer or purchasing agent, this co.	2 yrs. engineering & production control, 3 yrs. as foundry manager, other cos.
15	7	7	7 yrs. in purch. adm., another co.	4 yrs. with government regulatory agency
16	3	30	23 yrs. as buyer or P.A., this co.	4 yrs. production, this co.
17	3	24	6 yrs. as P.A., this co.	11 yrs. production, 4 yrs. finance, this co.
18	9 mos.	unknown	Materials manager this co.	Production, another co.

Table 12-3 (Continued).

Position number	No. years in purc. res.	No. years with present co.	Purchasing experience	Experience other than purchasing, with latest experience listed first
19	4	20	16 yrs., price analyst and buyer, this co.	None
20	3 mos.	2	1 1/2 yrs. as buyer, expediter, this co.	None
21	5	5	None	2 yrs. as economics specialist, with consulting firm; 5 yrs. as economist in private research agency.
22	6 mos.	8	5 yrs. as buyer, this co.	3 yrs. as research chemist, this co.
23	3	3	None	4 yrs. in economics dept., another co.
Average	2 +	11 +	6 +	

years in this type of work may be partly explained by the relative newness of staff purchase research positions in many of the ten companies interviewed.

Eleven years was the average length of employment of purchase researchers with their present company. One individual had been employed by his present company for 30 years, but only the last three in purchase research. Five individuals had been with their present company 16 or more years before going into purchase research work. Five of the researchers had started with their present company in that job. Two of these five were doing primarily commodity study research, and had held jobs in the economics area with their previous employers.

Fourteen of the researchers (60%) had had some type of purchasing experience prior to assuming their present position. Ten of these fourteen had this purchasing experience with their present employer; three had experience in purchasing with a different employer; and one researcher had purchasing experience both with his present employer and with a previous employer. The average number of years purchasing experience for the 23 researchers was slightly over six. Of those nine researchers who had purchasing experience with only their present company, the average was over nine years of experience.

Nine researchers had no purchasing experience prior to assuming their present position. Two of the three individuals

engaged primarily in making commodity studies had had no purchasing experience. Since this work was dependent more upon analytical knowledge, perhaps actual buying experience would have added little to their skill in making these studies. Four of the nine without actual purchasing experience were with one company, engaging in research on topics in all three major research categories. In this particular company, none of the staff purchase research personnel, including the research supervisor, had had any actual purchasing experience. Another of the individuals who had had no purchasing experience did research solely on the Transportation topic; another was concerned primarily with the administration of a Value Analysis program; another, with an engineering background, was involved only in research on the Substitution, Specification, and Method of Production or Manufacture topics.

Six of the 23 researchers had had no work experience, other than in purchasing. Of those researchers who had previous work experience in areas other than purchasing, the most frequently indicated areas of this experience were production, engineering, and accounting.

4. Compensation

The average annual salary of the 23 researchers was \$13,700. The median annual salary was \$12,000. Salaries went from a low

range of \$7,500 to \$10,000, to a high range of \$18,000 to \$24,500. These salary figures were adjusted upward in each company to reflect the value of fringe benefits received (pension, bonus, insurance, etc.) based on information from the appropriate company accounting department.

Desirable Qualifications

In each of the companies interviewed, an attempt was made to determine what education and experience background was considered desirable for persons doing staff purchase research work. The opinion of the chief purchasing executive on this matter was obtained in eight of the ten companies interviewed; in the other two companies this was discussed with the purchase research supervisor. The person interviewed was asked to express his opinion on what qualifications were desirable for a staff purchase research employee. In several of the firms, the personnel presently occupying one or more of the researcher or research supervisor positions did not meet the stated desirable qualifications.

All persons interviewed stated that a college degree was desirable for persons in staff purchase research positions. Most specified that the degree should be in accounting, business administration, economics, engineering, or statistics. One firm, in the Chemical Industry, specified a degree in

chemistry, with some additional college work in business administration. Most executives said they would prefer an individual who also held an advanced degree, although one firm felt that an advanced degree might be a handicap to an individual. This particular firm had originally started its purchasing research effort with persons holding advanced degrees, but experience did not meet their expectations, due perhaps to the personalities involved.

Two of the companies indicated that for work on the Commodity Study and Supply, Demand, or Price Forecast topics, actual purchasing administration or buying experience was not considered necessary, and perhaps would not even be helpful. All companies considered some buying or purchasing administration experience desirable for individuals working on the other topics. In the words of one research supervisor:

Much of our work might be termed as "trouble shooting" in that we are called in from time to time to assist in problem areas which arise in our branch purchasing operations. Actual purchasing experience or experience in purchasing administration is necessary if the researcher is to understand the problem and surrounding circumstances, and also to gain the respect of the purchasing people in our branch purchasing operations.

A Director of Purchasing put it this way: "The purchase researcher needs to have some experience at a buying desk, in order to be sensitive to what the buyer can or cannot do."

The purchasing managers in two of the firms in which a large part of the work of purchasing research consisted of

major commodity studies felt that related experience in economic analysis or marketing research was desirable, and essential, for that type of work. The purchasing managers in three of the firms stated that cost accounting experience was desirable. Four of the purchasing managers stated that engineering experience, preferably in product design work, was desired in their staff purchase research personnel. These latter four firms were ones which devoted considerable attention to the Substitution, Standardization, Specification, and Method of Production or Manufacture research topics.

It should be noted here that the educational background possessed by the largest number of purchasing research personnel was engineering; however, the majority of purchasing managers did not indicate this as the most desirable educational background for people in a staff purchasing research capacity. This apparent dichotomy between desirable and actual educational background can probably be explained by the fact that few universities in the past have offered much advanced work in the functional area of purchasing and materials management. Thus companies have been limited as to their source of persons to fill staff purchasing research positions, and have had to employ persons having an educational background which differs from that considered most desirable.

The National Association of Purchasing Agents in recent

years has increased considerably its efforts in the area of professional development. Perhaps still a further increase is warranted in professional development efforts directed at making possible increased educational opportunities for persons in staff purchasing research positions and individuals who might wish to pursue this as a career.

Chapter Summary

A total of 31 persons in the job categories of purchase researcher and purchase research supervisor in ten companies were interviewed, to determine the educational background, work experience, and compensation of purchase research personnel in these companies.

In eight of the ten companies the staff purchase research function was headed by a research supervisor, who had one or more subordinates reporting to him. In three of these eight companies the supervisor performed primarily administrative duties; in the other five companies the purchase research supervisor himself researched various topics. Four of the purchase research supervisors had the term "manager" in their titles. Six of the eight supervisors were college graduates; the other two supervisors had done some college work. Two of the six degree holders had a master's degree (one in business administration, the other in agricultural economics). Three of

the supervisors had bachelor's degrees in engineering, one in business administration, one in economics, and one in public and international affairs.

The average number of years experience of the supervisors with their present company was 11; the average years of experience in their present position as purchase research supervisor was two. Three of the supervisors were promoted to their present position from a subordinate purchase research position, and two came from the market research area. Only three of the eight supervisors had had any actual buying experience. The average annual salary, including fringe benefits, of the eight managers was \$15,000. The lowest salary range was from \$10,000 to \$12,500; the highest from \$27,000 to \$36,000.

Twenty-three purchase researchers (staff purchase research personnel in a non-managerial capacity) were interviewed. Five of these individuals reported to a purchasing manager; 18 to a purchase research supervisor. A variety of position titles were used for the job of purchase researcher, but the term "analyst" was used in the title of several of these positions. Eighteen, or over three-fourths of the purchase researchers interviewed, were college graduates, and five of the researchers held a master's degree. Those researchers who did work primarily on such topics as Substitution, Standardization, or Method of Production or Manufacture had,

for the most part, educational backgrounds in engineering.

The majority of those researchers who did primarily commodity study research had degrees in economics.

The average number of years of the researcher in his present position was slightly over two, compared to an average of 11 years total service with his present company. The individual with the longest years of service in the position of purchase researcher had been in that position only seven years, again giving evidence of the relative newness of staff purchasing research positions. Ten of the researchers had been in purchasing research work one year or less.

Fourteen, or 60%, of the researchers had had some actual buying or purchasing administrative experience. The average number of years of buying or purchasing administrative experience of these 14 researchers was slightly under ten years. The average salary of the 23 researchers was \$13,700; the median salary was \$12,000, including fringe benefits. The low salary range was \$7,500 to \$10,000; the high range was \$18,000 to \$24,500.

All purchasing executives interviewed indicated that a college degree was a desirable qualification for staff purchase research personnel. Actual buying experience was considered desirable for staff research personnel, but for people primarily involved in the preparation of commodity studies of purchased materials it was not considered a necessity.

CHAPTER XIII

BENEFITS, DIFFICULTIES AND FUTURE OF STAFF

PURCHASING RESEARCH

Introduction

This chapter discusses the benefits which have been received by companies from the utilization of a staff purchase research function and the difficulties which have been encountered in the staff approach to purchasing research. Additionally, estimates of expected future growth of the staff purchase research function are presented, to indicate the direction and magnitude of changes which might be anticipated in the developing trend toward the performance of purchasing research by staff specialists.

The data on the benefits, difficulties, and future of the staff purchasing research function were obtained largely by the mail questionnaire. Specifically, responding executives were asked to supply the following four items of information: (1) the benefits which had been received from purchasing research (Question 11), (2) the year in which a person will be assigned full time to purchasing research, if no one already was assigned (Question 5), (3) whether any purchasing research positions, or major types of projects, had been abolished during 1959 or 1960 (Question 10), and (4) the estimate of the five-

year future for purchasing research in their company (Question 9). The questionnaire also invited comments on purchasing research, and many of the additional comments made concerned the benefits which had been received from the staff purchasing research function.

Some information on the benefits, difficulties, and future of the staff purchasing research function was obtained from the ten companies with staff which were interviewed, and is presented in this chapter. Most of the quoted statements in this chapter were obtained by the questionnaire. All quotations indicate the industry in which the respondent was located.

Over-all Benefits of Staff Purchasing Research

Many companies stated the major benefit to their company from the staff purchasing research function had been a "better buying job." While most companies did not indicate specific benefits received from staff purchasing research, almost all companies with staff who responded to the question on benefits from their research staff indicated that the work of the staff had enabled their company to obtain greater value for dollars expended by the purchasing department. The following four statements about the over-all benefits of the staff research function are indicative of the results achieved from purchasing research by those companies with a purchase research staff:

In an era of increasing competition, a definite need for Purchasing Research became apparent. The Director of Material created the "Procurement Planning" section for the purpose of researching and evaluating data for improving costs and purchasing practices. Resultant benefits were gratifying. The improvement of cost reduction techniques through constant application of purchasing operations research and analysis will continue to help . . . maintain our status as a competitive . . . manufacturer. (Transportation Industry)

We are able to buy more intelligently having first gone through a period of investigation. We are able to see our problems before they arrive and prepare for them. We are able to unearth imaginative solutions to present problems that would not develop if we simply performed the day-to-day buying function. (Chemical Industry)

Purchasing research provides a tool to more effective buying through examination, exploration, comparison and the application of ingenuity with an organized, factual approach. (Transportation Industry)

Purchase research has paid off in:

1. Lower-cost materials
2. Reduced costs (Investment) for unit of capacity.
3. Equipment with lower operating costs.
4. New materials that resulted in lower-cost finished product.
5. Better cost control by means of long-term contracting.
6. Reduced cost of purchasing. (Chemical Industry)

Specific Benefits of Staff Purchasing Research

Several of the companies with a purchase research staff found the use of a staff specifically benefited their purchasing operation by assuring an organized approach to purchasing research and by providing the buyer with the type of information he needed to perform effectively his purchasing job. Other

specific benefits from the staff approach to purchasing research were commented on by some of the surveyed purchasing executives; the seven specific benefits indicated from the use of a purchase research staff are discussed below.

1. An Organized Program

The use of a purchase research staff tends to assure that purchasing research will be done on an organized basis.

Several purchasing executives commented that purchasing research should be a key activity in any well-run purchasing department. This study showed that companies without a research staff did do some purchasing research, although the amount of research done was considerably less.

Many of the purchasing executives in companies with staff stated a major benefit from the use of a staff was that purchasing research will be done on a planned, orderly basis, which would assure more valuable results from purchasing research. Some stated that if they did not have a research staff, this would greatly limit the amount of research that could be done.

Two of the comments regarding this specific benefit from the use of a research staff were as follows:

The greatest benefit of Purchasing Research is having a Continuous and Organized cost-reduction program-- regardless of how good a thing is, it must be continuously sold and this will only come about on an organized basis. (Primary Metals Industry)

Can research subjects that operating personnel, because of time, responsibilities, etc., can not cover. (Electrical Machinery, Equipment, Supplies Industry)

2. Specialized Knowledge

The use of specialized staff purchase research personnel makes available specialized skill and knowledge to the purchasing organization. Some areas of purchasing research may require technical skill or knowledge that is not possessed by buying or administrative personnel within the purchasing department. For instance, the type of research involved in the Commodity Study, and Supply, Demand, and Price Forecast topics may require specialized economic and statistical background and knowledge for optimum results from this research.

One of the purchasing executives commented on the specialized knowledge of staff personnel as one of the benefits received from staff purchasing research, as follows:

Major benefits are in the area of supply-demand analysis on agricultural commodities. These analyses lead to price judgments. This work probably requires staff assistance--a new viewpoint. The other research work can probably be done just as well by the buyer, provided his work load permits. (Chemical Industry)

3. Aid to the Buyer

The use of a purchase research staff aids the buyer through provision of information on which better buying decisions and more effective negotiations can be based, and relieves the

buyer from certain research responsibilities, permitting him to concentrate on his primary buying responsibilities. Previous chapters have shown that the presence of a research staff does decrease the involvement of the buyer in the purchasing research that is done, permitting the buyer to devote more time to his buying job. Several of the purchasing executives did indicate that the presence of staff does relieve the buyer of certain research responsibilities, and provides the buyer with information which enables him to do a more effective job of negotiation and buying, as the following seven quotations indicate:

Our thinking on having a staff man handle most of the work is that it frees the various branch plant buyers from developmental work and allows them time to concentrate on their immediate buying job. It gives them more time to buy and enables them to do a better buying job. (Miscellaneous Manufacturing Industry)

The staff man conducts the general research and the line buyer is free to do research, or value analysis, or just plain better buying job on specific items. (Machinery, except Electrical, Industry)

Results from Purchasing Research work, from the time it was established, have been primarily additional information and tools for buying personnel. They have been well received and useful. (Paper Industry)

Commodity studies have benefited our buyers' ability to bargain. (Electrical Machinery, Equipment, and Supplies Industry)

Buyers able to negotiate on much firmer ground due to over-all training and information fed by purchasing research. (Electrical Machinery, Equipment, and Supplies Industry)

In conjunction with the buying area, Purchasing Research has contributed to substantial improvements in coordinating the business aspects of administering an annual buying job of major proportions. In line with this, improved communications with regard to market evaluations, current economic developments, etc., have contributed much to getting the buying function in a more knowledgeable position. (Transportation Industry)

4. Training Ground for Buying Personnel

Staff purchase research positions may be used as a training ground for buyers and purchasing administrators. Several of those companies interviewed felt one of the benefits of an organized purchasing research organization was that these staff positions could be used to provide excellent training for purchasing personnel. Since purchase research personnel often do research on a myriad of research topics and perform many related activities, these personnel are exposed, in breadth and depth, to many purchasing problem areas. In some of the interviewed companies, buyers were rotated through purchase analyst positions as a part of the department's internal training program. In two of the companies interviewed, previous research managers had been promoted to purchasing administrative positions.

Some of the executives responding on the questionnaire also indicated one of the benefits from the staff research program was that it provided an opportunity for training buying personnel, as the following quotation shows:

We also use our Value Analysis Group for the development of buyers. This is an excellent training ground. (Transportation Equipment Industry)

5. Increased Purchasing Organization Effectiveness

The results of work done by a purchase research staff often enable greater organizational effectiveness in the purchasing function. Companies doing research on the Purchasing System topics have often found that a major benefit of the work done by the research staff in this area is the development of a more effective purchasing organization structure, as well as administrative procedures which simplify the purchasing job and enable performance of the total purchasing job with fewer personnel. Three of the executives in the companies surveyed highlighted this as a major benefit from their staff purchasing research function, as the following quotations show:

Research studies have enabled us to change our organization and assignments resulting in a budget reduction for purchasing of \$78,000 for fiscal 1961. (Electrical Machinery, Equipment, Supplies Industry)

Purchasing department performance has shown areas of over-load and areas of inefficiency. Results: redistribution of work load has increased total output without apparent reduction in quality of work. (Electrical Machinery, Equipment, Supplies Industry)

Benefits derived from purchasing research have resulted in substantial reduction in personnel due to improved methods of inventory control, processing of purchase requests and record keeping. (Transportation Equipment Industry)

6. Improved Vendor Relations

The ability to better evaluate purchase alternatives and to make sounder purchasing decisions, based on information supplied by the research staff, may result in improved vendor relationships. Although this was not frequently indicated as one of the benefits from the staff purchasing research function, it was indicated by a few of the purchasing executives, as the following quotation shows:

Have improved sales relationships with vendors and have produced plus business. (Food and Tobacco Industry)

7. Increased Status of the Purchasing Function

The work of a purchasing research staff frequently brings increased recognition to the purchasing department and results in improved relations between purchasing and other departments of the company. Frequently an aggressive staff purchasing research program, by enabling more efficient use of the purchasing dollar and by developing better systems for servicing the purchasing needs of other departments, will increase the stature of the purchasing function within the firm.

Staff research personnel often work closely with personnel in other departments to develop mutually satisfactory solutions to problems. The work done by the staff also demonstrates the willingness of purchasing personnel to actively study various

aspects of the purchasing function as a basis for increasing purchasing efficiency.

Several of the purchasing executives indicated that increased purchasing status was one of the main benefits they had received from the staff purchasing research function, as the following six quotations illustrate:

More recognition from other departments due to help we were able to give them through better knowledge of conditions applying to a good buying job. (Electrical Machinery, Equipment, Supplies Industry)

Increased scope of purchasing authority and responsibility. (Primary Metals Industry)

Improved communications with other divisions and departments of the company. (Primary Metals Industry)

These and other programs, completed or in progress, have improved the stature of Purchasing within the company; interdivisional relations have improved; general acceptance of Purchasing as a contributor to the Company. (Chemical Industry)

The Value Analysis area of Purchasing Research has paid off in dollars, but beyond that, it has improved relations between manufacturing, engineering, and purchasing. (Electrical Machinery, Equipment, Supplies Industry)

Purchase Research has caused us to call upon other services of our company in order (1) to correlate our efforts with company objectives at the lowest cost in time and money, and (2) to acquaint our management and associates with our activities. (Chemical Industry)

Profitability of Firms with a Staff Purchase Research Function

Those firms with a purchase research staff were more profitable than firms without staff. To provide some indication

of profitability of firms with and without staff the data on profit as a percent of sales and profit as a percent of invested capital were collected and averaged for the 99 firms with staff, and the 205 firms without staff, which responded to the mail questionnaire. These data on profits were obtained from the "Fortune Directory of the 500 Largest U. S. Industrial Corporations" in the July, 1960, issue of Fortune.¹ Thus these financial data were for the year 1959.

Table 13-1 presents these data on profit as a percent of sales and profit as a percent of invested capital, for both companies with and without staff. These data are presented both for companies which made a profit in 1959, and for the total group of companies. Four companies in each group had incurred a financial loss during 1959.

Companies with staff showed a higher profitability on both financial measures. Considering only those companies which had made a profit, companies with staff had an average profit as a percent of sales of 6.18%, compared to 5.81% for companies without staff. Companies with staff had an average profit as a percent of invested capital of 12.41%, compared to 11.38% for companies without staff. When the total number of companies (both those which showed a profit and those which showed a loss)

¹"The Fortune Directory: The 500 Largest U. S. Industrial Corporations," Fortune, LXII (July, 1960), pp. 131-150.

Table 13-1. Comparison of aggregate financial data between companies with, and those without, a purchase research staff^a

	Average	
	Profit as a percent of sales	Profit as a percent of invested capital
The 95 companies with staff which made a profit ^b	6.18	12.41
The 201 companies without staff which made a profit ^b	5.81	11.38
The total 99 companies with staff	5.83	11.60
The total 205 companies without staff	5.70	11.16

^a Source: "The Fortune Directory: the 500 Largest U. S. Industrial Corporations," Fortune, LXII (July, 1960).

^b The four companies with a loss excluded.

were considered, the differences between average percents drop, but still those companies with staff had a higher average profit as a percent of sales, and also as a percent of invested capital, than companies without staff (Table 13-1).

These data certainly do not offer any conclusive proof that the presence of a staff purchase research function determines over-all profitability of a firm. Conceivably, those firms with a purchase research staff are ones which are not only aggressive in their treatment of the purchasing function, but are also doing a more aggressive job in other management areas. Since this study did not attempt conclusions on the effects of the staff purchase research function on over-all company profitability, the above data are presented only as an indication of what might be a relationship between the presence of a staff purchase research function and the profitability of a firm. Further research, which was not attempted by this study, might be warranted in attempting to establish the relationship between over-all profitability and the various aspects of the purchasing function.

Difficulties Encountered in Staff Purchasing Research

Although the results of this study have indicated an impressive list of advantages from the utilization of staff personnel for the performance of purchasing research, some

limitations to the use of purchase research staff were found in the companies interviewed and also in the replies to the questionnaire.

Two of the companies interviewed indicated that the work of the staff purchase research personnel was not readily accepted at first by the buying personnel within the organization. The first reaction on the part of buying personnel was that the staff research personnel would usurp, or diminish, their status in the purchasing department. Such conflicts as were pointed out by the research personnel in these two companies are relatively common organization problems and have been widely treated in the literature of management.² This conflict between the staff and the buying personnel in one of those companies interviewed had been overcome, and it was felt by the purchase manager in that company that the work of the research staff had now earned them the respect and cooperation of plant purchasing personnel. In the other company, considerable difficulty had been experienced with certain members of the

² See for example, Keith Davis, "Friction in Human Relations, A Study in Staff-Line Relationships," Business Horizons, School of Business, Indiana University (December, 1956), pp. 44-48; Improving Staff and Line Relationships, Studies in Personnel Policy, No. 153 (New York: National Industrial Conference Board, 1956), pp. 70-80; Lyndall F. Urwick, "Fitting in the Specialist without Antagonizing the Line," Advanced Management, XVII (January, 1952), pp. 13-16

buying organization in getting cooperation in providing information needed by the staff.

This study did not produce any evidence to support the contention that the presence of a research staff reduces the total amount of purchase research in which the buyer is involved. It is true that this study indicates that the buyer in companies with staff was involved in a smaller percent of the topics actually researched than in companies without staff. However, the buyer actually was involved in more research topics in those companies with staff, because companies with staff did research on so many more topics (see Chapter VI).

Three of those companies responding by questionnaire which did not have a research staff, and as nearly as can be determined, had never utilized a purchase research staff, indicated doubts as to the advisability of the establishment of specialized personnel for the performance of purchasing research. From what this study has learned about the staff purchase research function, the validity of the following objections is questionable. The quotations of these three executives follow:

While purchasing research is a highly regarded, necessary augment of our purchasing activity, we do not favor the highly formalized concept which major corporations practice in that operation. It is our considered opinion that in a department which is limited in personnel we would be ill advised to employ a specialist or specialists to carry on an activity which the buyers and administrators are well qualified to execute in their own areas of specialization. Attention

to the research and study aspects of their assignments contributes in a substantial way to the development of the buyers and their assistants. (Electrical Machinery, Equipment, and Supplies)

There is no pure purchasing research here. As the need arises that specific need would be researched. This is a lean, hard-core company with no excess fat at the administrative level for abstract or esoteric research. (Primary Metals Industry)

Am dubious about Purchasing Research. No doubt it advances knowledge, but it also provides opportunities for "make work" (Parkinson's Law) and petty jealousies, etc. Am doubtful if the bank account at the end of the year would indicate that P. R. people paid their salaries. In this new competitive economy we may not be able to afford these things, desirable as they may be; and we may have to make more "seat of the pants" judgments. (Electrical Machinery, Equipment, and Supplies)

Company Plans to Establish Purchasing Research Staff

Fourteen percent of those companies without a staff purchasing research function had definite plans to establish the function. Question 4 of the questionnaire asked companies to indicate the year in which they planned to assign a man full-time to purchasing research. Twenty-four of the 173 companies without staff which answered this question indicated definite plans to establish staff purchasing research personnel within their purchasing department (Table 13-2).

Seven companies indicated they plan to establish a staff in 1961, six companies plan to establish a staff in each of the years 1962 and 1963, and five companies plan to establish

Table 13-2. Company plans to establish purchase research staff

	Number of Companies (Sales, Million Dollars)				Total
	Under 100	100- 499	500- 999	1,000 & over	
Number w/o staff	52	121	21	11	205
<u>Year Plan to Establish Staff</u>					
1961		6	1		7
1962		4	1	1	6
1963		5	1		6
1964 or later	3	2			5
No plans	44	83	14	8	149
Blank	5	21	4	2	32
Total w/ definite plan to establish a Purchase Research staff	3	17	3	1	24

Table 13-1. Company plans to

Number w/o staff	
Year Plan to Establish	
1961	
1962	
1963	
1964 or later	
No plans	
Blank	
Total w/ definite plan to establish a Purchased Research staff	

a purchase research staff in 1964 or later. While the answers to this question were only estimates, these data do show that the trend toward the establishment of the staff purchase research function should continue in future years.

The 24 companies with definite plans to establish the staff purchase research function were scattered through all but four of the 17 industrial classifications. Only in Lumber and Wood, Printing and Publishing, Rubber and Plastics, and Textile Mill and Apparel did none of the companies indicate plans to establish staff purchasing research positions. Four companies in Food and Tobacco; three companies in Primary Metals, and in Electrical Machinery, Equipment, and Supplies; and two companies in Chemicals, Petroleum Refining, Transportation Equipment, and Machinery, except Electrical indicated plans to establish staff positions. One company in each of the other industry groups had plans to establish a research staff. Thus in almost all industry groups, one or more companies were definitely planning to establish the staff purchasing research function.

Several of the purchasing executives in companies which had definite plans to establish a purchase research staff made statements regarding their need for, and plans to establish, this staff. Five of these comments of the chief purchasing executives follow:

a purchase research staff to the
to this question were
the trend toward the
research function should
The 24 companies
purchase research function
of the 17 industrial
Printing and Publishing
and Apparel did none
staff purchasing research
and Tobacco three companies
Electrical Machinery
in Chemicals, Petroleum
and Machinery, except Electrical
staff positions. One company
groups had plans to establish
eliminate all industry groups, and
planning to establish the staff purchasing
Several of the purchasing research
had definite plans to establish a purchase research staff
made statements regarding their need for, and plans to establish
this staff. Five of these comments of the chief purchasing
executives follow:

Our research program began about four years ago. At present we still place the responsibility with the buyer. However, with a formal inventory control program now established, we will start extensive purchase analysis. This will require a full-time researcher whereas at present we approach this on a part-time basis, directing the buyer in his efforts. (Food and Tobacco Industry)

Our company is presently in the process of developing a strong, active purchasing department. Through previous experience we know the value of purchasing research. We have a definite need for such an activity, but we have many other problems to overcome before we expand in this area. We will develop the potential of purchasing research as a separate arm of our department as soon as we can, but it is four to five years off. (Chemical Industry)

Because of mergers and changes in organization by our company in the last five years, it has been impossible to organize the department to the extent thought necessary. Purchasing research has been done by Purchasing personnel on an informal basis somewhat as the occasion demanded. Benefits have been both monetary and informative. The extent of monetary gain has been sufficient to form a basis for a request for additional personnel. (Chemical Industry)

Purchasing research is growing rapidly in this company and soon should be a formal program at every division. At present, most research is performed by the buyer, with help from other departments. (Electrical Machinery, Equipment, Supplies Industry)

Unfortunately we do not possess the manpower to conduct this function as we would like It is our hope that management will recognize the need in the near future. (Primary Metals Industry)

Also significant to an analysis of the future trend toward the establishment of the staff purchase research function is the fact that when asked specifically whether any purchase research positions had been abolished during 1959 or 1960

Our research project is present we still plan to buy. However, with the now established, we have analysis. This will be whereas at present we have basis, directing the Tobacco Industry)

Our company is a strong, active in experience we have have a definite in many other products areas. We will be search as a separate can, but it is Industry)

Because of the our company in the to organize the purchasing research on an informal basis. Benefits have been to extent of monetary basis for a request Industry)

Purchasing research and soon should be a At present, most research help from other departments Equipment, Supplies Industry)

Unfortunately we do not present the we conduct this function as we would like to our hope that management will conduct the next future. (Primary Needs Industry)

Also significant to an analysis of the future is the establishment of the staff purchase research function is the fact that when asked specifically whether any purchase research positions had been abolished during 1952 or 1953

(Question 10), only three of the 304 responding companies indicated such action had occurred. Of these three companies, only one had actually discontinued the staff research function. The other two companies had either reduced the number of staff purchase research positions, or transferred the research position organizationally.

The company which had discontinued the function did so during the 1960 recession. Their statement relative to the discontinuance was: ". . . with economic pressures, more of our purchasing research has been placed with our buying and purchasing administration group--it is not a matter of de-emphasis, but of location."

The company which had reduced its purchase research staff from two to one man, also did this during the 1960 recession. Their statement was: "For a year and a half, one other man was assigned, but because of the austerity program, the work force had to be reduced."

The third company transferred the function organizationally. Their statement was: ". . . discontinued Value Analyst in Purchasing Department--now assigned to Production Planning Dept. with value analysis in Purchasing Dept. now being done by buying personnel."

The Future Importance of Purchasing Research

A great majority of all companies, both those with and those without staff, predicted that purchasing research would grow in importance in their company. Eighty-two percent of those companies with staff and 79% of companies without staff predicted that purchasing research would grow in importance in their company over the next five years (Table 13-3).

Question 9 asked the respondents to make an estimate of the five-year future for purchasing research in their company. The percent of companies with staff which indicated a considerable increase in importance of purchasing research in their company (38%) was 1.4 times as great as the percent for companies without staff (27%). This indicates that companies with staff forecast a larger role for the purchase research function than was forecast by companies without staff.

The percent of companies with and without staff which predicted no change in importance was essentially the same (18% and 21%, respectively). Only one company of the total 276 companies which answered this question indicated that purchasing research would decrease in importance.³ A greater

³This company, one with staff, indicated they had slightly over 50% of their total purchasing personnel in a staff research capacity--an unusually large percentage! Additionally, this company is one that is known to be undergoing significant organizational changes.

Table 13-3. Estimates of the future importance of purchasing research, by company size

		Percent Indicating Each Response ^a									
		Company Size (1959 Sales, Million Dollars)									
		Under 100		100-499		500-999		1,000 & over		Total	
No. Companies Responding ^b	Forecast	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff
		8	48	58	106	13	17	17	9	96	180
Increase considerably in importance	38%	21%	45%	27%	31%	24%	18%	56%	38%	27%	
Increase moderately in importance	62	58	38	51	38	71	59	0	44	52	
Not change in importance	0	21	16	22	31	6	24	44	18	21	
Decrease moderately in importance	0	0	0	0	0	0	0	0	0	0	
Decrease considerably in importance	0	0	1	0	0	0	0	0	1	0	

^aColumns do not necessarily total to 100% because of rounding of figures.

^b28 companies did not answer this question. The percentage figure is the percent of those responding to this question.

increase in importance of purchasing research was predicted by the companies with staff in the smallest size group than was predicted by companies with staff in the larger categories. This might be explained by the fact that, as this study showed, the staff purchasing research programs in the smaller companies did not seem as well developed as in the larger companies, either in terms of numbers of staff purchase research personnel or in number of topics researched. The fact that the percent of companies with staff in the largest size category which predicted a considerable increase in importance was relatively small can probably be explained by the fact that many of these companies already had well-developed staff purchase research programs. For example, several companies with staff in the largest size category which indicated no change in importance for purchasing research in their company already had large numbers of personnel in staff purchase research positions, and indicated research done on a majority of the research topics.

Table 13-4 presents the forecasts of the five-year future importance for purchasing research by industrial classifications. In all industry classifications but one, over 50% of companies with, and those without, staff indicated that the importance of purchasing research would increase in their companies. The one exception was Fabricated Metal Products, where 60% of

increase in importance of research by the companies with an increase in size. This might be explained by the fact that the staff purchasing the products did not seem as well informed as the staff in the other divisions or in number of products. The results of companies with a staff purchasing a considerable amount of products can probably be explained by the fact that companies already had a research program. For example, the largest size category for purchasing research in the number of personnel in the research department and indicated research done by the company.

Table 13-4 presents the importance of research in the future importance for purchasing research by the companies. In all industry classifications but one, over 60% of the companies with, and those without, staff indicated that the importance of purchasing research would increase in their companies. The one exception was Fabricated Metal Products, where 60% of

Table 13-4. Estimate of the future importance of purchasing research, by industry classification

Industry	Percent indicating each response ^a									
	No. Responses ^b		Increase Considerably		Increase Moderately		Not change			
	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff
Crude Petroleum & Natural Gas	6	7	33%	14%	50%	57%	17%	29%		
Lumber and Wood	1	3	0	67%	100	33	0	0		
Paper	3	10	67	30	33	50	0	20		
Printing	0	4	0	0	0	75	0	25		
Chemicals	13	18	15	11	62	56	23	33		
Petroleum Refining	0	6	0	17	0	50	0	33		
Rubber & Plastics	0	3	0	0	0	67	0	33		
Stone, Clay, Glass	3	8	67	25	33	62	0	13		
Primary Metals	10	18	50	33	30	56	20	11		
Fab. Metal Products	5	9	20	22	20	45	60	33		
Machinery, Except Elec.	14	16	64	44	46	38	0	18		
Electrical Machinery, Equip- ment, and Supplies	9	14	11	36	67	43	22	21		
Transportation Equip.	16	16	38	25	38	56	24	19		
Mining ^c	2	4	0	25	50	50	0	25		
Textile Mill & Apparel	1	6	100	17	0	67	0	17		
Food and Tobacco	9	33	44	30	33	55	23	15		
Ordnance; Leather; Professional, Scientific, Optical; Misc. Mfg.	4	8	14	20	57	40	29	40		

^aColumns do not necessarily total across to 100% because of rounding of figures.

^bTwenty-eight companies did not answer this question.

^cOne company with staff indicated "Decrease Considerably."

companies with staff indicated no change in the future importance of purchasing research. With only three exceptions, in all industry classifications in which some companies had staff, the percent of companies with staff which indicated purchasing research would increase considerably in importance was greater than the percent for companies without staff. The only three exceptions were Fabricated Metal Products; Mining; and Electrical Machinery, Equipment, and Supplies. In five of the 14 industrial classifications in which some companies had staff, all companies with staff indicated that purchasing research would increase in importance; in only one of the 17 classifications did all the companies without staff indicate purchasing research would increase in importance. These data by industrial classification also emphasize that those companies with staff predicted greater future importance for purchasing research in their companies than was predicted by companies without staff.

Several of the companies with staff commented on the future growth potential of staff purchasing research in their company. Indicative of these comments are the following four quotations:

" . . . with this largely behind us we now have the basic framework set up to push purchasing research in a much bigger way in the future, and I feel that this area may well consist of at least three people in another year. (This company, in the Primary Metals Industry, had one researcher).

Potential is tremendous. (Stone, Clay, Glass Products Industry)

companies with staff industries of purchasing research industry classification. The percent of companies research would increase than the percent for exceptions were Table Machinery, Equipment classifications in with staff industries in importance; in only the companies without increase in importance. also emphasize that they greater future importance companies than was predicted

Several of the companies growth potential of staff industries. Indicative of these comments are the

... with this largely labor based framework set up to purchase research much bigger way in the future, and I feel that this area may well consist of at least this much in research. (This company, in the future, will have had one researcher.)

Potential as tremendous. (Storck, Clay, Glass products industry)

To date, this function has proven to be extremely valuable and no failures have been experienced. Greater emphasis will be placed in this area on a long-term basis. (Chemical Industry)

We believe very positively that the Purchasing Research function could grow in importance, as results today are substantially less than the potential. I believe this certainly to be true when considering Purchasing from the standpoint of the various companies and corporations involved. In our own case, we believe that we have accomplished a great deal in the area of Purchasing Research and that if we took a guess, we would find that we have arrived at an ascending curve of about 75% of our potential. We would expect to reach, in due course, at least 80% or 85% of our potential. From Purchasing as a whole, the Research function undoubtedly lags a great deal. My guess, although it is only a guess, would be that Purchasing Research, as such, represents only 20% to 25% of the possible potential.

Certainly it is an interesting subject and I am highly pleased with the results which we have obtained. It has been a great contributing factor to the over-all efficiency of our purchasing and has been an invaluable aid to assisting various purchasing specialists in our different groups.

It is undoubtedly true at the moment that Purchasing Research overall does lag Market Research for the sales function, but they have had it for a considerably longer time than Purchasing. It is also conceivable that Market Research from a sales standpoint should always be larger perhaps than that of Purchasing, but certainly not of greater importance necessarily. (Chemical Industry)

The effect of this present study on the future of the staff purchasing research function cannot be known. A summary of the results of this study will be mailed to all purchasing executives who responded to requests for information about their company's practice of purchasing research. However, it is possible that the results of this study may have some

To date, this research is valuable and no further emphasis will be placed on this basis. (Chemical Research)

We believe very function could be substantially less certainly to be the standpoint of involved. In our accomplished a Research and that we have arrived at our potential. We at least 80% of a whole, the Research deal. My guess is that Purchasing to 25% of the point

Certainly is highly pleased with It has been a great efficiency of our aid to assisting different groups.

It is undoubtedly Research overall does function, but they have time than Purchasing. Market Research from a larger perhaps than that of not of greater importance

The effect of this present study is still purchasing research function. The results of this study will be called. It is not executives who responded to requests for information. In their company's practice of purchasing research, however, it is possible that the results of this study may have some

influence on the still further growth and development of the staff purchasing research function in major United States industrial firms.

Chapter Summary

This chapter discussed the benefits realized from the use of a purchase research staff, the difficulties in use of staff for purchase research, and the future of the purchase research function. The information presented on benefits, limitations, and future of staff purchasing research was obtained largely from those companies responding by questionnaire, although some information on these aspects of the staff purchase research function was obtained from the companies interviewed.

The majority of companies stated the major benefit to their company from the utilization of a research staff had been a "better buying job." Illustrative of statements on the major benefit of staff purchasing research activities is the following quotation made by one of the chief purchasing executives: "Purchasing research provides a tool to more effective buying through examination, exploration, comparison and the application of ingenuity with an organized, factual approach."

The staff purchase research function had provided the following seven more specific benefits for some of the companies:

- (1) an organized program, which emphasized research as a means

influence on the staff
staff purchasing research
Industrial firms.

Chapter Summary

This chapter discusses

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research function was

The majority of companies

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benefit of staff purchasing

quotation made by one of the

"purchasing research provides a

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of ingenuity with an organized technical research

The staff purchase research function has provided the

following seven more specific benefits for some of the companies:

(1) an organized program, which emphasized research

of improving purchasing performance; (2) specialized knowledge, necessary if research was to be done on certain topics; (3) aid to the buyer, by providing information on which better buying decisions and more effective negotiations could be based, and by relieving him of research responsibilities so that he could concentrate more fully on his buying job; (4) a training device for buying and administrative personnel; (5) increased purchasing organizational effectiveness, through research, which enabled development of a more effective organizational structure and more efficient purchasing procedures; (6) improved vendor relations, through the ability to better evaluate purchasing alternatives and to make sounder purchasing decisions; and (7) increased status of the purchasing function, by improving relations between purchasing and other departments, and by demonstrating the progressiveness of the purchasing department.

Those companies with a purchase research staff had a higher percent of profit to sales and to invested capital for the year 1959 than companies without a research staff. No contention is made that this better financial performance was necessarily due solely to the presence of the staff purchase research function, although it tends to support the position that the more successful companies have been somewhat more aggressive in their treatment of various aspects of the purchasing function.

of improving purchasing [unclear]
necessarily is research [unclear]
to the buyer, by providing [unclear]
decisions and more efficient [unclear]
by relieving him of [unclear]
concentrate more fully [unclear]
device for buying and [unclear]
purchasing organization [unclear]
which enabled developing [unclear]
structure and more efficient [unclear]
vendor relations, and [unclear]
checking alternatives [unclear]
and (7) increased [unclear]
relations between purchaser [unclear]
demonstrating the [unclear]
Those companies with a [unclear]
higher percent of profit to sales [unclear]
the year 1959 than companies with [unclear]
conclusion is made that this better [unclear]
necessarily due solely to the presence of a [unclear]
research function, although it [unclear]
that the more successful companies have been [unclear]
aggressive in their treatment of vendors [unclear]
purchasing function.

Two of the companies interviewed indicated that considerable resistance was found on the part of buying personnel when the research staff was first introduced, for buying personnel felt the work of the staff would diminish their importance within the purchasing department.

Fourteen percent of those companies without staff indicated they had definite plans to assign at least one man full-time to purchasing research in the near future. At least one company in almost all industry groups planned to establish the staff purchasing research function. This indicates that the already established trend toward the establishment of full-time staff research positions within the purchasing department is likely to continue in the future.

Over 75% of those companies both with, and without staff, predicted that purchasing research would grow in importance in their companies over the next five years. Those companies with staff forecast a somewhat larger growth in importance for purchasing research than was forecast by companies without staff.

CHAPTER XIV

SUMMARY AND CONCLUSIONS

Need for Study

This study was made to provide new information on the staff purchase research function within the purchasing department of large American industrial firms.

Such a study has been needed, for purchasing occupies a position of extreme importance and influence in the business system. In most industrial firms, purchases are the largest dollar control element with which management must be concerned. Purchasing, however, has remained a relatively unexplored frontier of knowledge, and to date, little information has been available on an important and rapidly growing phase of purchasing--the staff purchasing research function.

For the purpose of this study, staff purchasing research is defined as systematic investigation and fact-finding, by staff specialists, undertaken to improve purchasing performance. These staff specialists are located, organizationally, within the purchasing department and devote the majority of their time to providing data and information useful to buying and administrative personnel in purchasing.

Ample evidence was found by this study to support the major hypothesis that the staff purchasing research function is an emerging managerial function, exercising an increasingly

important influence on materials decisions, and becoming established as an important area of activity within the purchasing department of major industrial corporations of the United States.

This study of staff purchasing research covered such areas as: prevalence of staff, historical growth, objectives, personnel involvement, topics researched, evaluation of benefits, related activities performed, administration of research, data sources utilized, background and compensation of personnel, and future potential growth of staff purchasing research. These data were analyzed by three basic classifications: (1) company size, (2) type of industry, and (3) companies with and companies without purchase research staff.

Background

As a background for this study, an examination was made of early literature on purchasing to determine the first writings on the use of staff for purchasing research (Chapter II).

This examination proved that the literature on purchasing began many years earlier than recent authors have indicated. The nineteenth century literature covered many topics still widely discussed today, such as: seeking competitive bids (1870),

organization of the purchasing function (1890), duties of a purchasing agent (1890), standardization (1890), capital equipment purchasing (1892), and the responsibilities of the purchasing agent (1898).

The first book found devoted exclusively to purchasing, The Handling of Railway Supplies--Their Purchase and Disposition, was published in 1887. Book on Buying (1905) was the first book found devoted exclusively to purchasing in other than railroad organizations.

Articles on industrial purchasing began appearing with increasing frequency after the turn of the century and by 1927, approximately 15 books on purchasing had appeared.

Literature on Staff Purchasing Research

In 1928 two books, Scientific Purchasing by Edward T. Gushée and Lionel F. Boffey, and Principles of Scientific Purchasing by Edward F. Harriman, were published presenting well-developed managerial approaches to purchasing. Both strongly recommended the employment of staff purchasing research personnel within the purchasing department for collection and analysis of data upon which to base purchasing decisions (Chapter III). No further references to the staff purchase research function were found until after World War II.

Starting in 1947, articles on staff purchase research

organization of the purchasing department (1890),
purchasing agent (1890),
equipment purchasing (1890),
purchasing agent (1890)

The first book
The Handling of Railways

Disposition, was published
was the first book
in other than railway
Articles on industrial
increasing frequency
1927, approximately 1927

Literature on Staff Purchasing

In 1928 two books, Staff Purchasing

Grubb and Lionel F. Boffey, Staff Purchasing

Purchasing by Edward F. Hartman, was a practical manual

well-developed managerial approach to purchasing. Both

strongly recommended the employment of staff purchasing research

personnel within the purchasing department for collection and

analysis of data upon which to base purchasing decisions

(Chapter III). No further references to the staff purchase

research function were found until after World War II.

Starting in 1947, articles on staff purchase research

began appearing in trade magazines and became increasingly frequent in the 1950's. Although these articles described specific company practices, indicating increasing interest in this subject, they made little attempt to present aggregate information.

Methodology

To determine whether staff purchasing research is an emerging managerial function, exercising an increasingly important influence on materials decisions, and becoming established as an important area of activity within the purchasing department of major industrial corporations in the United States, 13 specific hypotheses were tested.

The data to test these hypotheses were gathered by the following two primary means: (1) interviews conducted during 1960 and 1961 in ten large industrial firms which utilized a purchase research staff; and (2) a questionnaire mailed in March, 1961, to 491 chief purchasing executives in the 500 largest United States industrial firms. Three hundred four usable responses were received, or a 62.6% response. Relative to other studies of this nature, this response was gratifyingly large and provided a substantial amount of data upon which conclusions of this study have been based (Chapter IV). To provide an indication of the probable effect

of staff purchasing research, responding companies were divided, for purposes of comparison, into two groups: those with a purchase research staff and those without staff.

All the following 13 specific hypotheses were tested and substantiated.

Prevalence of Staff Purchase Research

1. The staff purchase research function has been established in a substantial number of the 500 largest United States industrial firms (Chapter V). Almost one-third of the companies responding to the mail questionnaire utilized full-time staff purchase research personnel. Ninety-nine (32.6%) of the 304 companies which responded indicated one or more staff purchasing research personnel were employed within the purchasing department. Two hundred five companies (67.4%) reported they had no staff purchasing research personnel. A much larger percent of companies in durable goods industries utilized a research staff (40%) than in non-durable goods (21%).

Relation to Company Size

2. The utilization of a purchase research staff is related to company size (Chapter V). Sixty-two percent of companies in the largest size category (1959 sales of over \$1,000 million)

of staff purchasing research and

divided, for purposes of comparison,

those with a purchase research staff

staff.

All the following are

substantiated.

Prevalence of Staff Purchase Research

1. The staff purchase research

in a substantial number of companies

Industrial firms (Chapter V)

responding to the mail questionnaire

purchase research personnel

companies which responded in 1952

research personnel were assigned to

ment. Two hundred five companies

staff purchasing research personnel.

of companies in durable goods industries

staff (40%) than in non-durable goods industries

Relation to Company Size

2. The utilization of a purchase research staff is related

to company size (Chapter V). Sixty-two percent of companies

in the largest size category (1952 sales of over \$1,000 million)

had a purchase research staff, compared to 40% in the \$500-999 million category, 32.8% in the \$100-499 category, and only 13.3% in the smallest size category.

The utilization of a purchase research staff also was related to the total number of personnel in the purchasing department. A much larger percent of companies with a large number of personnel in the purchasing department employed a purchase research staff than did companies with a smaller purchasing department.

Growth Trend

3. The staff approach to purchasing research has been largely a post-World War II development (Chapter V). Eighty-seven percent of those companies with a purchase research staff established it during 1950 or later. Less than 7% of the firms had established a research staff prior to the end of World War II, although one firm had established a purchase research staff as early as 1900, one in 1928, and four in 1930.

The number of new establishments of the staff purchase research function has approximately doubled every five years over the last 15 years (1946-1960). This indicates a strong growth trend toward utilization of the staff form of organization for purchasing research.

Number of Personnel

4. The number of personnel in a staff research capacity within the purchasing department is related to the total number of personnel within the purchasing department (Chapter V). The number of personnel in staff purchasing research positions increased with company size. Also, the number of personnel employed in purchasing increased with company size. Therefore, this indicates that the number of staff purchasing research positions increased as the number of purchasing personnel increased. The average number of staff purchasing research personnel was 7.5.

To illustrate objectives and organization of staff purchasing research, case studies of several companies were presented in Chapter V.

Research Done and Results Produced

5. Companies with a staff purchase research function do more research and produce more worth-while research results than companies without a staff purchase research function (Chapters VI, VII, VIII, IX). Companies with staff researched 1.75 times as many topics as companies without staff. Companies with staff researched an average of 62.6% of the 38 topics listed, compared to 35.8% for companies without staff. Also, each of the individual topics was researched by a

4. The number of personnel

within the purchasing department

number of personnel within the

the number of personnel

increased with company

employed in purchasing

this indicates that

positions increased

increased. The average

personnel was 7.5.

To illustrate

research, case

presented in Chapter V.

Research Done and Results

2. Companies with a staff research

more research and produce more

than companies without a staff

(Chapter VI, VII, VIII, IX). Companies with staff

1.75 times as many copies as companies without staff.

Companies with staff researched an average of 53.6% of the 38

copies listed, compared to 35.6% for companies without staff.

Also, each of the individual topics was researched by a

larger percent of companies with staff (Table 14-1). Furthermore, in all but one of the industry classifications, companies with staff researched a larger percentage of topics (Appendix 2). Company size appeared to influence the number of topics researched only in companies with staff.

Most worth-while results were achieved on 1.8 times as many topics by companies with staff. Also, most worth-while results were indicated by a larger percent of companies with staff for 36 of the 38 research topics (Table 14-1). Furthermore, in each industrial classification, the companies with staff declared a larger percent of topics produced most worth-while results (Appendix 2).

Evaluation of Research

6. The results of research done by staff purchase research personnel are valued more highly than research done by buyers or administrators within the purchasing department (Chapters VI, VII, VIII, IX).

In those companies which had a research staff, 29% of the topics researched solely by the staff were declared as having produced most worth-while results. This was 1.7 times larger than for the buyer (17%) and 1.45 times larger than for the administrator (20%).

Table 14-1. Topics researched, topics produced most worth-while results

Research Topics	Percent of Cos. Researching Topic		Percent Indicating Most Worth-while Results ^a						Factors		
			All Cos. Reporting		Only Cos. Which Researched Topic						
	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	Occurrence ^b	Benefit ^c	Evaluation ^d
Finding potential supply source	34%	56%	10%	10%	12%	17%			1.5	1.0	.7
Analysis of production facilities	84	47	7	5	8	11			1.8	1.4	.7
Blanket orders	83	59	21	20	25	34			1.4	1.1	.7
Commodity study	80	56	33	15	41	26			1.4	2.2	1.6
Forms design	80	48	9	8	11	16			1.7	1.1	.7
Make or buy	78	34	18	7	23	21			2.3	2.6	1.1
Analysis of financial capacity	77	44	1	1	1	3			1.8	1.0 ^e	.3 ^e
Value analysis	76	47	41	17	54	38			1.6	2.4	1.4
Data processing equipment	76	38	17	5	22	13			2.0	3.4	1.7
Method for evaluating purchasing dept. performance	75	38	10	6	13	17			2.0	1.7	.8
Method for evaluating buyer performance	75	33	10	3	13	10			2.3	3.3	1.3
Price forecast	74	45	12	4	16	10			1.7	3.0	1.6

Table 14-1 (Continued).

Percent Indicating Most Worth-while Results											
Percent of Cos. Researching Topic	All Cos. Reporting		Only Cos. Which Researched Topic ^a		Factors						
	W/ Staff	W/O Staff	W/ Staff	W/O Staff	Occur- rence ^b	Benefit ^c Evalu- ation ^d					
Research Topics	W/ Staff	W/O Staff	W/ Staff	W/O Staff	Occur- rence ^b	Benefit ^c Evalu- ation ^d					
Vendor performance evaluation	74	41	13	6	18	15	1.8	2.2	1.2		
Standardization	71	47	18	12	25	27	1.5	1.5	.9		
Small or rush orders	71	40	13	7	18	17	1.8	1.9	1.0		
Scrap disposal	68	48	12	7	18	16	1.4	1.7	1.1		
Inventory control	68	48	19	15	28	32	1.4	1.3	.9		
Correct order quantity	67	48	16	10	24	22	1.4	1.6	1.1		
Packaging	64	51	16	17	25	34	1.2	.9	.7		
Substitution	64	45	14	12	22	28	1.4	1.1	.8		
Specification	64	38	15	8	23	22	1.7	1.9	1.0		
Method for evaluating supplier performance	64	33	7	2	11	7	1.9	3.5	1.6		
Supply forecast	62	35	14	4	23	13	1.7	3.5	1.7		
Payment or cash discount	59	30	4	5	7	16	2.0	.8	.4		
Lease or buy	57	41	9	4	16	12	1.4	2.3	1.3		
New product	57	35	6	5	11	15	1.6	1.2	.7		

Table 14-1 (Continued).

		Percent Indicating Most Worth-while Results								
		Percent of Cos. Researching Topic		All Cos. Reporting		Only Cos. Which Researched Topica		Factors		
		W/ Staff	W/O Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	Occur- renceb	Benefitc	Evalu- ationd
Research Topics										
Trade relations										
data		56	40	11	11	20	28	1.4	1.0	.7
Transportation		54	32	9	6	17	20	1.7	1.5	.9
Demand forecast		51	32	9	2	17	8	1.6	4.5	2.1
Estimate of manu- facturing costs		51	17	3	1	6	6	3.0	3.0 ^e	1.0 ^e
Pricing procedure or structure		49	27	10	2	20	9	1.8	5.0	2.2
Formulation of price index		45	17	6	1	13	3	2.6	6.0	4.3
Tariff and import regulation		38	11	5	2	13	26	3.5	2.5	.5
Supplier attitude survey		35	15	2	2	6	10	2.3	1.0 ^e	.6 ^e
Method of pro- duction or mfg.		31	17	14	1	45	6	1.8	14.0	7.5
Estimate of distribution costs		28	9	5	1	18	6	3.1	5.0 ^e	3.0 ^e
Learning curve		24	8	5	0	21	0	3.0	5.0 ^f	21.0

Table 14-1 (Continued).

Percent Indicating Most Worth-while Results									
Percent of Cos. Researching Topic	All Cos. Reporting		Only Cos. Which Researched Topic ^a		Factors				
	W/ Staff	W/ Staff	W/O Staff	W/ Staff	W/O Staff	Occur- rence ^b	Benefit ^c Evalu- ation ^d		
Research Topics	22	11	3	1	14	13	2.0	3.0 ^e	1.1 ^e
Vendor sales strategy									
Average: 18 Purchased Materials, Pro- ducts, or Services Topics	62	38	15	8	25	21	1.6	1.9	1.2
Average: 9 Vendor Topics	57	31	7	4	11	14	1.8	1.8	.8
Average: 11 Pur- chasing System Topics	67	36	11	7	18	19	1.9	1.6	1.0
Average: All 38 Topics	62.6	35.8	11.8	6.4	18.8	18	1.75	1.8	1.0

Topic:

Answer: A

Topic:

Answer: B

Topic:

Answer: C

Topic:

Answer: D

Topic:

Answer: E

Topic:

Answer: F

Topic:

Answer: G

Topic:

Answer: H

Topic:

Answer: I

Topic:

Answer: J

Topic:

Answer: K

Topic:

Answer: L

Topic:

Answer: M

Topic:

Answer: N

Topic:

Answer: O

55

11

2

1

1

1

1

1

1

1

1

Research Topic

Answer: A

Topic:

Answer: B

Topic:

Answer: C

Topic:

Answer: D

Topic:

Answer: E

Topic:

Answer: F

Topic:

Answer: G

Topic:

Subject

Answer: A

Topic:

Answer: B

Topic:

Answer: C

Topic:

Answer: D

Topic:

Answer: E

Topic:

Answer: F

Topic:

Answer: G

Topic:

Section

Topic

Researching

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Most widely-used research
Percentages

Page 14-1 (Continued)

Table 14-1 (Continued).

^aThis rating is not necessarily comparable between companies. Any bias probably would favor the category "W/O Staff."

^bRatio of the percent of companies with staff to the percent of companies without staff which researched a topic.

^cRatio of the percent of companies with staff to the percent of companies without staff which indicated a topic produced most worth-while results.

^dRatio of the percent of companies with staff to the percent of companies without staff which indicated most worth-while results produced when a topic was actually researched.

^eDue to the small number of firms which declared this topic produced most worth-while results, this factor may not be too meaningful.

^fNo companies without staff indicated this topic produced most worth-while results.

Involvement of Staff

7. In companies with a purchase research staff, that staff alone does the complete research on many of the topics researched (Chapters VI, VII, VIII, IX). In those companies which had a research staff, the staff alone did the research on 23% of all topics researched, and was involved in 45% of the topics. The staff alone researched an average of 5.4 topics and was involved in 10.6 topics (Table 14-2).

Assistance to Buyer and Administrator

8. The utilization of a purchasing research staff assists buyers and administrators by relieving them of certain research duties (Chapters VI, VII, VIII, IX).

The administrator alone did the research on 24% of all topics researched by companies with staff, compared to 39% in companies without staff. The administrator was involved (did the research alone, or with others in the department) in a smaller percent of topics researched by companies with staff than without staff (41% to 54%), (Table 14-2).

The buyer alone did the research on only 22% of topics researched in companies with staff, but 46% of topics in companies without staff. In total, the buyer also was involved in a smaller percent of topics researched in companies which had staff, compared to those without staff (47% to 63%) (Table 14-2).

7. In companies with a

staff alone does the company

researched (Chapter VI)

which had a research staff

on 33% of all topics

of the topics. The number

topics and was involved

assistance to buyer and

assistance to buyer and

8. The utilization

buyers and administrators

Chapter VI, VII

The administrator alone

topics researched by companies

in companies without staff. The

(did the research alone, or with

in a smaller percent of topics researched

staff than without staff (41% to 54%)

The buyer alone did the research

researched in companies with staff, but 44% of topics

companies without staff. In total, the buyer alone was involved

in a smaller percent of topics researched in companies which

had staff, compared to those without staff (41% to 54%)

14-15

Table 14-2. Involvement of personnel in research done

	Purchase Research Staff			Administrator			Buying Personnel		
	Alone			Total			Alone		
	W/ Staff	W/O Staff	Total	W/ Staff	W/O Staff	Total	W/ Staff	W/O Staff	Total
Average Percent Involvement in Research done:									
Purchased Materials, Products,									
Service Topics	25%	50%	19%	33%	41%	51%	24%	52%	49%
Vendor Topics	16	37	22	32	38	49	29	51	59
Purchasing System Topics	24	42	34	47	43	64	15	36	32
All Topics	23%	45%	24%	39%	41%	54%	22%	46%	47%
Average Number of Topics in Which each Classification of Personnel did Research:									
Purchased Material, Products, Service Topics	2.8	5.6	2.2	2.3	4.6	3.5	2.7	3.4	5.8
Vendor Topics	.8	2.0	1.2	.9	2.0	1.4	1.5	1.4	3.0
Purchasing System Topics	1.7	3.2	2.5	1.8	3.2	2.5	1.1	1.4	2.4
All Topics	5.4	10.6	5.8	5.0	9.7	7.4	5.3	6.2	11.2
									493

^aBecause of rounding, averages for the three categories may not total to the average for all topics.

1

Thus, if an equal amount of research were done by companies with and without staff, the administrator and buyer would be involved in a smaller percent of the research in those companies with staff. In this sense, the staff does relieve the buyer and administrator of certain research duties. (However, it should be remembered that, as this study has shown, companies with staff research substantially more topics.)

Involvement in Related Activities

9. Frequently staff purchase research personnel are involved in activities of an administrative nature, in addition to research duties (Chapter X). Twelve related activities were listed on the questionnaire. It was indicated that when related activities were performed, staff alone did 52%, and was involved in 67%, of them. The staff alone performed an average of 3.6 of the related activities, and was involved in 4.6 of them (Table 14-3).

Those companies with staff performed 1.6 times as many related activities as companies without staff, and rated 2.3 times as many of them as being of greatest importance.

The presence of a research staff also appeared to affect the involvement of the buyer in performance of related activities,

Thus, if an equal amount of money is spent on research and development with and without staff, the company with staff is more likely to be involved in a smaller number of projects. This is true for companies with staff. In contrast, the buyer and administrator of the project should be involved. (However, it should be noted that the data shown, companies with staff, are not shown.)

Involvement in Related Activities

8. Experimentally involved in activities of addition to research activities were listed on the that when related activities and was involved in 57% formed an average of 3.6 of the total involved in 4.3 of them (Table 1a-1) Those companies with staff performed 5.3 times as many related activities as companies without staff (5.3 times as times as many of them as being of greatest importance The presence of a research staff also appeared to affect the involvement of the buyer in performance of related activities

Table 14-3. Related activities performed and considered of greatest importance; involvement of research staff in activities performed

Related Activities	Percent of Companies Performing		Percent of Companies Declaring of Greatest Importance		Percent of Companies in which Staff Involved in Activities which were performed	
	W/	W/O	W/	W/O	Alone	Total
Supply Current Market Information to others	77%	61%	18%	11%	30%	56%
Prepare Data for Vendor Negotiations	84	50	13	10	27	60
Maintain Price Index	59	39	6	4	53	58
Prepare or Maintain Purchasing Manual	65	40	18	5	71	78
Maintain Purchasing Library	43	33	2	1	58	60
Prepare Purchasing Budget	60	40	3	2	65	72
Conduct Management Audit of Purchasing Operation	57	18	11	2	81	86
Prepare Forecast of Business Trends	43	21	7	2	54	77
Inform Another Department on Current Business Trends	57	44	7	4	44	63
Prepare Purchasing Personnel Requirements Forecast	50	28	5	1	62	70
Administer or Conduct Purchasing Training Program	55	28	6	3	67	75
Assemble Competitor Intelligence Information	32	15	4	1	25	56
Average Percent	57%	35%	9%	4%	52%	67%

for even though companies with staff performed more related activities, the number performed by the buyer was smaller in companies with staff. (No data were collected on administrator involvement in this area.)

Data Sources

10. Companies with a purchase research staff employ a larger number of data sources in developing information necessary for purchasing research, than are employed by companies without a purchase research staff (Chapter X).

Companies with a purchase research staff used 1.6 times as many data sources. A higher percent of companies with staff used each of the 22 listed data sources. Also, companies with staff declared 1.7 times as many data sources as being most useful. It is significant that many of the more technical data sources were used much more extensively by companies with staff.

Education

11. The individuals employed in a staff purchase research capacity represent a high level of educational achievement, in terms of numbers holding college degrees (Chapter XII).

Of the 31 staff purchase research personnel interviewed in the ten companies, 75% were college graduates. Seven (23%)

for even though companies with
activities. The number of
companies with staff.
involvement in this area

Data Sources

10. Companies with

larger number of data
necessity for purchase
companies without a purchase
Companies with a purchase
as many data sources.
staff used each of the 11
with staff decided 1.1
most useful. It is significant
data sources were used
staff.

Education

11. The individuals employed in the

represent a high level of education and
in terms of numbers holding college degrees (Chapter 11)
of the 11 staff purchase research personnel interviewed
in the ten companies, 15% were college graduates. Seven (15%)

also had master's degrees. The degrees primarily were in business administration and engineering. All purchasing administrators interviewed stated a college education was desirable for persons doing staff purchase research work.

Benefits

12. Companies with a purchase research staff evaluate the general benefit received from all types of purchasing research more highly than companies without staff (Chapter XIII).

The comments from executives showed that the benefits from purchasing research were evaluated more highly in those companies with staff. The most often-stated benefit from staff purchasing research was a "better buying job." Seven additional benefits indicated from the use of a staff were as follows:

(1) an organized research program, (2) specialized knowledge, (3) aid in buying decisions and negotiations, (4) a training device, (5) increased organizational effectiveness and more efficient procedures, (6) improved vendor relations, and (7) increased purchasing status and improved relations with other departments.

Future Growth

13. Companies with a purchase research staff evaluate the future growth potential of purchasing research in their

also had master's degrees. The business administration and the administrative interview were desirable for persons having

Benefits

12. Companies with

general benefit received
more highly than companies

- The comments from the companies with staffs of purchasing research were as follows:
- (1) an organized research staff
 - (2) aid in buying decisions and
 - (3) increased organizational efficiency
 - (4) improved procedures
 - (5) increased purchasing status and
 - (6) increased purchasing status and
 - (7) increased purchasing status and
- other departments.

Future Growth

13. Companies with a purchase research staff evaluate the

future growth potential of purchasing research in their

companies more highly than those companies without staff
(Chapter XIII).

Thirty-eight percent of companies with staff indicated that purchasing research would increase considerably in importance in their company over the next five years, compared to 27% of companies without staff. However, a larger percent of companies without staff indicated a moderate future growth in importance (52% to 44%). Thus, although companies with staff did evaluate the future growth slightly higher, almost 80% of all companies predicted growth in importance for purchasing research.

Fourteen percent of companies without staff indicated definite plans to establish a staff, which shows that the trend in the establishment of staff should continue in future years. Only 1% of the 304 surveyed companies indicated reduction in resources devoted to staff purchasing research in the last two years. Only one company (.3%) indicated purchasing research would decrease in importance in the next five years.

Terminal Conclusions

Evidence presented in this study points to the fact that staff purchasing research is a rapidly growing managerial function, exercising an increasingly important influence, and

becoming established as an important area of activity in American business. Based upon the information gathered in this study, it is concluded that a company with a purchase research staff probably will:

1. Perform more research.
2. Utilize more and better data.
3. Improve research results.
4. Advance purchasing administration.

While there is no conclusive proof that these accomplishments will result solely from the staff, the weight of evidence indicates that staff is playing an increasingly important role in improving purchasing efficiency.

Due to the successes already achieved by purchase research staffs, greater resources undoubtedly will be devoted to this function in the years ahead. For those who wish to investigate the potentials of this area more fully, detailed data on many research topics and industrial classifications have been presented in prior chapters. It is sincerely hoped that the results of this initial study will be useful to those already utilizing a staff, and to those establishing a purchase research staff in the future.

becoming established as a

American business. Based

this study, it is concluded

research staff probably

1. Perform more

2. Utilize more

3. Improve more

4. Advance more

While there is

more will result

indicates that state

role in improving

Due to the success

state, greater research

function in the years

the potential of this

research topics and

presented in prior

results of this initial

utilizing a staff, and

research staff in the

APPENDICES

MICHIGAN STATE UNIVERSITY EAST LANSING

APPENDIX 1

COLLEGE OF BUSINESS AND PUBLIC SERVICE

DEPARTMENT OF PERSONNEL AND PRODUCTION ADMINISTRATION

March 17, 1961

Dear Mr.

A comprehensive study of purchasing research has been under way at Michigan State University for the last year. This study is financed in part, by grants from the National Association of Purchasing Agents and the Purchasing Agents Association of Chicago.

Enclosed is a questionnaire on purchasing research which we are asking you, as the leading purchasing executive in a major firm, to complete and return as soon as possible. Individual answers to all questions will remain completely confidential.

An early return of your questionnaire will enable completion of this project in the summer of 1961. If you wish a complimentary summary of the complete study, "Purchasing Research in Major United States Industrial Firms," return the enclosed post card.

Please, help us advance purchasing knowledge.

Sincerely yours,

Harold E. Fearon
Research Project Director

HEF:at

Enclosure

SURVEY OF PURCHASING RESEARCHIN MAJOR UNITED STATES INDUSTRIAL FIRMS

1. How is purchasing primarily organized in your company?
☐ Centralized, in one location
☐ Decentralized, by major divisions or units
2. How many total personnel, exclusive of secretarial and clerical, were assigned to purchasing activities in your company at the end of 1960? _____

Consider PURCHASING RESEARCH to be systematic investigation and fact finding undertaken to improve purchasing performance. For this questionnaire, to establish a basis of comparison, include only those specific purchasing research topics where:

- a. an individual spent a minimum total of one day's time on a topic, and
- b. a written report was prepared.

3. Check by whom and on which topics purchasing research was performed in your company during 1959 or 1960.

RESEARCH TOPICSPURCHASING RESEARCH PERFORMED BY:

A. Research on Purchased Materials Products, or Services	PURCHASING RESEARCH PERFORMED BY:		
	Staff Purchasing Research Personnel	Buying Personnel	Purchasing Administrators
Commodity study.....	_____	_____	_____
Correct order quantity	_____	_____	_____
Demand forecast	_____	_____	_____
Lease or buy.....	_____	_____	_____
Make or buy	_____	_____	_____
Method of production or manufacture	_____	_____	_____
New product	_____	_____	_____
Packaging	_____	_____	_____
Price forecast	_____	_____	_____
Pricing procedure or structure.....	_____	_____	_____
Scrap disposal	_____	_____	_____
Specification	_____	_____	_____
Standardization	_____	_____	_____
Substitution	_____	_____	_____
Supply forecast	_____	_____	_____
Tariff and import regulation	_____	_____	_____
Transportation	_____	_____	_____
Value analysis	_____	_____	_____
None done	_____	_____	_____
Other (please list)			
_____	_____	_____
_____	_____	_____
_____	_____	_____

(Question is continued on the next page)

RESEARCH TOPICSPURCHASING RESEARCH PERFORMED BY:

	Staff Purchasing Research Personnel	Buying Personnel	Purchasing Administrators
--	---	---------------------	------------------------------

B. Research on Vendors

Analysis of financial capacity	_____	_____	_____
Analysis of production facilities	_____	_____	_____
Finding potential supply source	_____	_____	_____
Estimate of distribution costs	_____	_____	_____
Estimate of manufacturing costs	_____	_____	_____
Supplier attitude survey	_____	_____	_____
Trade relations data	_____	_____	_____
Vendor performance evaluation	_____	_____	_____
Vendor sales strategy	_____	_____	_____
None done	_____	_____	_____
Other (please list)			

_____	_____	_____
_____	_____	_____
_____	_____	_____

C. Research on The Purchasing System

Blanket orders	_____	_____	_____
Data processing equipment	_____	_____	_____
Forms design	_____	_____	_____
Formulation of price index	_____	_____	_____
Inventory control	_____	_____	_____
Learning curve	_____	_____	_____
Payment or cash discount	_____	_____	_____
Small or rush orders	_____	_____	_____
Method for evaluating:			
Buyer performance	_____	_____	_____
Purchasing department performance	_____	_____	_____
Supplier performance	_____	_____	_____
None done	_____	_____	_____
Other (please list)			

_____	_____	_____
_____	_____	_____
_____	_____	_____

4. Return to Question 3, and place a double check in the appropriate space(s) to designate which research produced the most worthwhile results.

5. Estimate the year when a person was first assigned full time, or will be assigned full time, to purchasing research in your company:

19 _____
No plans _____

6. How many personnel were assigned to the following types of purchasing research positions in your company at the end of 1960:

_____ researcher _____ research supervisor _____ secretarial and clerical

7. Check, in the following two columns, any of the information sources used in purchasing research. Place a double check by those considered most useful.

<input type="checkbox"/> Books on purchasing	<u>Publications of:</u>
<input type="checkbox"/> Consultants	<input type="checkbox"/> foreign governments
<input type="checkbox"/> Corporate annual reports	<input type="checkbox"/> N.A.P.A.
<input type="checkbox"/> Other departments of your company	<input type="checkbox"/> trade associations
<input type="checkbox"/> Public libraries	<input type="checkbox"/> United Nations
<input type="checkbox"/> Purchasing personnel in other companies	<input type="checkbox"/> U.S. Dept. of Agriculture
<input type="checkbox"/> Representatives of foreign governments	<input type="checkbox"/> U.S. Dept. of Commerce
<input type="checkbox"/> Trade association personnel	<input type="checkbox"/> U.S. Dept. of Labor
<input type="checkbox"/> Trade newspapers and magazines	<input type="checkbox"/> U.S. Dept. of Interior
<input type="checkbox"/> U.S. government personnel	<input type="checkbox"/> universities
<input type="checkbox"/> Vendor sales personnel	<input type="checkbox"/> vendors
<input type="checkbox"/> Vendor technical personnel	<input type="checkbox"/> other (please list)

8. Check any of the following related activities performed during 1959 or 1960 by purchasing research personnel, buying personnel, or both. Double check activities of greatest importance.

	<u>Performed By:</u>	
	Staff Purchasing Research Personnel	Buying Personnel
Supply current market information to others	<input type="checkbox"/>	<input type="checkbox"/>
Prepare data for vendor negotiation.....	<input type="checkbox"/>	<input type="checkbox"/>
Maintain price index	<input type="checkbox"/>	<input type="checkbox"/>
Prepare or maintain purchasing manual.....	<input type="checkbox"/>	<input type="checkbox"/>
Maintain purchasing library	<input type="checkbox"/>	<input type="checkbox"/>
Prepare purchasing budget	<input type="checkbox"/>	<input type="checkbox"/>
Conduct management audit of purchasing operation.....	<input type="checkbox"/>	<input type="checkbox"/>
Prepare forecast of business trends	<input type="checkbox"/>	<input type="checkbox"/>
Inform another department on current business trends.....	<input type="checkbox"/>	<input type="checkbox"/>
Prepare purchasing personnel requirements forecast	<input type="checkbox"/>	<input type="checkbox"/>
Administer or conduct purchasing training program	<input type="checkbox"/>	<input type="checkbox"/>
Assemble competitor intelligence information	<input type="checkbox"/>	<input type="checkbox"/>

9. What is the five-year future for purchasing research in your company?

☐ will increase considerably in importance
☐ will increase moderately in importance
☐ will not change in importance
☐ will decrease moderately in importance
☐ will decrease considerably in importance

10. If your company has added or abolished any purchasing research positions, or major types of projects, during 1959 or 1960, indicate: what and why:

(continue on back of page, if necessary)

11. On the back of this page, indicate what benefits have been received from purchasing research, and what criteria have been used to measure results.

Additional comments on purchasing research also are encouraged.

MICHIGAN STATE UNIVERSITY EAST LANSING

APPENDIX 1

COLLEGE OF BUSINESS AND PUBLIC SERVICE

DEPARTMENT OF PERSONNEL AND PRODUCTION ADMINISTRATION

April 4, 1961

Dear Mr.

During the week of March 20th you should have received a questionnaire on "Purchasing Research in Major U. S. Industrial Firms."

Can you please return this questionnaire by April 20th?

If you cannot complete the entire questionnaire, please answer as many of the questions as possible. Should you have any problems of interpretation which may be delaying your response, or if you have not received your questionnaire, feel free to call me at ED 2-1511, extension 2201.

If you have already returned your questionnaire, I do wish to thank you for your assistance. The response to date has been very gratifying. To make this research of maximum value, we are striving for as large a return as possible, and we need your questionnaire.

Those purchasing executives who return their questionnaire by April 20th will receive a complimentary summary of the completed research during the summer of 1961.

Very truly yours,

Harold E. Fearon
Research Project Director

HEF:at

LETTER TO RESEARCH AND PROJECT DIRECTOR

RESEARCH AND PROJECT DIRECTOR

April 4, 1961

Dear Mr. :

During the week of
questionnaire on "Public
trial films."

Can you please

If you cannot copy
answer as many of the
any problems of interest
response, or if you have
feel free to call me at

If you have already
to thank you for your
been very gratifying. To
we are striving for as
your questionnaire.

Those purchasing examination
by April 25th will receive a
pleased research during the summer of 1961.

Very truly yours,

Harold E. Pearson
Research Project Director

HEP:ac

Appendix 2-1. Food and Tobacco (Response: 9 companies with staff, 37 companies without staff)

Research Topics	Percent of Companies						Percent Indicating Most Worth-while Results					
	Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic					
	Total	w/o Staff	w/o Staff	Total	w/o Staff	w/o Staff	Total	w/o Staff	w/o Staff	Total	w/o Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS												
Commodity study	67%	100%	59%	26%	56%	19%	39%	56%	32%			
Correct order quantity	59	67	57	17	22	16	30	33	29			
Demand forecast	39	56	35	4	11	3	11	20	8			
Lease or buy	48	56	46	2	0	2	5	0	6			
Make or buy	28	67	19	2	0	2	8	0	14			
Method of production or manufacture	24	67	14	4	11	3	18	16	20			
New product	46	67	41	2	0	3	5	0	7			
Packaging	78	100	73	30	44	27	39	44	37			
Price forecast	59	78	54	9	11	8	15	14	15			
Pricing procedure or structure	33	67	24	2	11	0	7	16	0			
Scrap disposal	35	22	38	5	0	5	13	0	14			
Specification	61	89	54	15	34	11	25	38	20			
Standardization	61	78	57	13	11	14	21	14	24			
Substitution	46	67	41	6	11	5	14	16	13			
Supply forecast	48	89	38	11	22	8	23	25	21			
Tariff and import regulation	7	22	3	0	0	0	0	0	0			
Transportation	28	33	27	6	0	8	23	0	30			
Value analysis	50	78	43	15	23	13	30	29	31			
AVERAGE	45	67	40	9	15	8	21	22	21			
VENDORS												
Analysis of financial capacity	59	78	54	2	0	3	4	0	5			
Analysis of production facilities	52	78	46	4	11	3	8	14	6			

Appendix 2-1. Food and Tobacco (continued)

Research Topics	Percent of Companies Researching Topic				Percent Indicating Most Worth-while Results							
	Researching Topic				All Companies Reporting				Only Companies Which Researched This Topic			
	Total	w/ Staff	w/o Staff	Total	9%	22%	6%	Total	13%	25%	9%	Total
Finding potential supply source	67%	89%	62%	9%	22%	6%	13%	25%	9%			
Estimate of distribution costs	15	33	11	2	0	3	14	0	25			
Estimate of manufacturing costs	33	78	22	0	0	0	0	0	0			
Supplier attitude survey	17	22	16	2	0	3	13	0	17			
Trade relations data	24	44	19	2	11	0	9	25	0			
Vendor performance evaluation	50	67	46	0	0	0	0	0	0			
Vendor sales strategy	20	22	19	4	0	6	22	0	29			
AVERAGE	37	57	33	4	5	3	10	9	10			
THE PURCHASING SYSTEM												
Blanket orders	67	89	62	15	0	19	23	0	30			
Data processing equipment	43	78	35	0	0	0	0	0	0			
Forms design	57	67	54	5	0	5	8	0	10			
Formulation of price index	24	56	16	2	0	3	9	0	17			
Inventory control	67	78	65	19	11	21	29	14	33			
Learning curve	4	11	3	0	0	0	0	0	0			
Payment or cash discount	41	67	35	9	0	11	21	0	31			
Small or rush orders	43	44	43	2	0	3	5	0	6			
Method for evaluating:												
Buyer performance	37	89	24	2	0	3	6	0	11			
Purchasing department performance	43	100	30	0	0	7	0	0	22			
Supplier performance	39	78	30	0	0	0	0	0	0			
AVERAGE	42	69	36	5	7	6	13	1	18			
AVERAGE, ALL TOPICS	36	65	29	7	8	7	19	13	23			

REPORT ON THE PROGRESS OF THE WORK DURING THE YEAR 1900

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Research Topics	Percent of Companies						Percent Indicating Most Worth-while Results					
	Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic					
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS												
Commodity Study	49%	59%	40%	8%	6%	10%	17%	10%	25%			
Correct order quantity	49	71	30	11	24	0	22	33	0			
Demand forecast	30	35	25	3	6	0	9	16	0			
Lease or buy	30	41	20	0	0	0	0	0	0			
Make or buy	59	88	35	24	41	10	41	47	29			
Method of production or manufacture	32	53	15	5	12	0	17	22	0			
New product	30	47	15	3	0	5	9	0	33			
Packaging	38	53	25	3	6	0	7	11	0			
Price forecast	41	65	20	0	0	0	0	0	0			
Pricing procedure or structure	41	71	15	11	23	0	27	33	0			
Scrap disposal	49	53	45	11	12	10	22	22	22			
Specification	35	53	20	3	6	0	8	11	0			
Standardization	57	77	40	14	18	10	24	23	25			
Substitution	43	59	30	8	12	5	19	20	16			
Supply forecast	27	41	15	3	0	5	10	0	33			
Tariff and import regulation	22	41	5	0	0	0	0	0	0			
Transportation	43	53	35	11	17	5	25	33	14			
Value analysis	57	82	35	30	52	10	52	64	29			
AVERAGE	41	58	26	8	13	4	20	23	15			
VENDORS												
Analysis of financial capacity	59	78	54	2	0	3	4	0	5			
Analysis of production facilities	70	94	50	8	12	5	11	13	10			

Appendix 2-2. Transportation Equipment (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Topic		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Finding potential supply source	65%	88%	45%	8%	11%	5%	13%	11%
Estimate of distribution costs	14	24	5	3	6	0	25	0
Estimate of manufacturing costs	41	71	15	3	6	0	8	0
Supplier attitude survey	24	41	10	0	0	0	0	0
Trade relations data	24	24	25	0	0	0	0	0
Vendor performance evaluation	59	77	45	14	32	5	41	11
Vendor sales strategy	14	24	5	0	0	0	0	0
AVERAGE	42	59	45	4	6	3	11	6
THE PURCHASING SYSTEM								
Blanket orders	62	88	40	11	24	0	17	0
Data processing equipment	49	76	25	22	35	10	44	40
Forms design	57	76	40	6	11	0	10	0
Formulation of price index	19	35	5	0	0	0	0	0
Inventory control	46	59	35	13	18	10	29	29
Learning curve	24	41	10	3	6	0	14	0
Payment or cash discount	30	41	20	0	0	0	0	0
Small or rush orders	54	71	40	8	23	0	33	0
Method for evaluating:								
Buyer performance	46	71	25	6	12	0	17	0
Purchasing department performance	49	76	25	3	0	5	6	20
Supplier performance	46	65	30	3	6	0	9	0
AVERAGE	44	64	27	7	12	2	15	8
AVERAGE ALL TOPICS	42	60	26	7	11	3	16	11

VALUE OF VIT. LOGIC

VALUE

---Gibson, Detachment

Experiments, 1914-1915, 1916

Experiments, 1914-1915

Methods for experiments

Summary of results

Experiments on 1914-1915

Experiments on 1914-1915

Experiments on 1914-1915

Experiments on 1914-1915

Experiments on 1914-1915

Experiments on 1914-1915

Experiments on 1914-1915

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Experiments on 1914-1915

VALUE OF VIT. LOGIC

VALUE

---Gibson, Detachment

Experiments, 1914-1915, 1916

Experiments, 1914-1915

Methods for experiments

Summary of results

Experiments on 1914-1915

Experiments on 1914-1915

Experiments on 1914-1915

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Experiments on 1914-1915

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Topic		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
PURCHASED MATLS, PRODS, SVCS								
Commodity Study	82%	100%	70%	39%	54%	30%	48%	54%
Correct order quantity	48	54	45	9	8	10	19	14
Demand forecast	52	62	45	13	8	10	17	13
Lease or buy	42	69	25	0	0	0	0	0
Make or buy	52	100	20	9	23	0	17	23
Method of production or manufacture	27	54	10	6	16	0	22	29
New product	58	85	40	9	8	10	16	9
Packaging	61	77	50	18	8	25	30	10
Price forecast	64	92	45	24	31	20	38	33
Pricing procedure or structure	30	46	20	3	8	0	10	17
Scrap disposal	61	77	50	3	0	5	5	0
Specification	48	54	45	12	0	20	25	0
Standardization	55	77	40	6	8	5	11	10
Substitution	67	85	55	18	0	30	27	0
Supply forecast	58	85	40	21	38	10	37	45
Tariff and import regulation	30	46	20	0	0	0	0	0
Transportation	48	69	35	12	15	10	25	22
Value Analysis	61	77	50	24	39	15	40	50
AVERAGE	52	73	39	13	15	11	24	20
VENDORS								
Analysis of financial capacity	55	77	40	9	15	5	17	20
Analysis of production facilities	82	100	70	6	0	10	7	0

Appendix 2-3. Chemicals (continued)

Research Topics	Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results					
				All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Finding potential supply source	79%	92%	70%	9%	0%	15%	12%	0%	21%
Estimate of distribution costs	24	46	10	12	31	0	50	67	0
Estimate of manufacturing costs	36	77	10	0	0	0	0	0	0
Supplier attitude survey	24	46	10	0	0	0	0	0	0
Trade relations data	58	69	50	15	8	20	26	11	40
Vendor performance evaluation	61	77	50	9	15	5	15	20	10
Vendor sales strategy	21	38	10	9	15	5	43	40	50
AVERAGE	49	69	36	8	10	7	16	14	19
THE PURCHASING SYSTEM									
Blanket orders	70	92	55	27	30	25	39	33	45
Data processing equipment	64	85	50	12	15	10	19	18	20
Forms design	61	77	50	15	8	20	25	10	40
Formulation of price index	36	62	20	9	24	0	25	38	0
Inventory control	58	77	45	12	8	15	21	10	33
Learning curve	6	15	0	3	8	0	50	50	0
Payment or cash discount	30	46	20	6	8	5	20	17	25
Small or rush orders	58	85	40	12	15	10	21	18	25
Method for evaluating:									
Buyer performance	61	92	40	12	16	10	20	17	25
Purchasing department performance	61	77	50	9	8	10	15	10	20
Supplier performance	52	69	40	15	15	15	29	22	38
AVERAGE	50	71	37	12	14	11	24	20	29
AVERAGE, ALL TOPICS	51	71	38	11	13	10	22	18	26

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Research Topics	Percent of Companies						Percent Indicating Most Worth-while Results					
	Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic					
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS												
Commodity study	70%	79%	63%	23%	21%	25%	33%	27%	40%			
Correct order quantity	63	79	50	10	7	13	25	9	25			
Demand forecast	37	43	31	0	0	0	0	0	0			
Lease or buy	50	64	38	14	21	7	27	33	16			
Make or buy	77	93	63	13	7	19	17	8	30			
Method of production or manufacture	33	29	38	3	7	0	10	25	0			
New Product	50	64	38	7	7	6	13	11	16			
Packaging	43	50	38	13	22	6	31	43	16			
Price forecast	60	71	50	0	0	0	0	0	0			
Pricing procedure or structure	30	21	38	3	0	6	11	0	16			
Scrap disposal	63	79	50	10	7	13	16	9	25			
Specification	47	64	31	10	21	0	21	33	0			
Standardization	63	79	50	10	14	7	16	18	13			
Substitution	53	64	44	3	7	0	6	11	0			
Supply forecast	53	64	44	4	0	6	7	0	14			
Tariff and import regulation	13	21	6	0	0	0	0	0	0			
Transportation	40	64	19	7	7	6	17	11	33			
Value analysis	70	93	50	40	58	25	57	62	50			
AVERAGE	51	62	41	10	11	8	19	18	19			
VENDORS												
Analysis of financial capacity	63	79	50	3	0	7	5	0	13			
Analysis of production facilities	70	86	56	10	7	12	14	8	22			

Appendix 2-4. Machinery, except Electrical (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Topic		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Finding potential supply source	67%	71%	63%	23%	14%	32%	35%	20%
Estimate of distribution costs	17	29	6	0	0	0	0	0
Estimate of manufacturing costs	33	43	25	3	7	0	10	17
Supplier attitude survey	23	36	13	3	7	0	14	20
Trade relations data	50	50	50	17	15	19	33	29
Vendor performance evaluation	53	71	38	7	7	6	13	10
Vendor sales strategy	20	36	6	0	0	0	0	0
AVERAGE	44	56	34	7	6	8	17	11
THE PURCHASING SYSTEM								
Blanket orders	67	64	69	34	21	44	50	33
Data processing equipment	57	71	44	14	14	13	24	20
Forms design	73	93	56	7	0	12	10	0
Formulation of price index	33	50	19	3	7	0	10	14
Inventory control	50	43	56	20	22	18	40	50
Learning curve	20	21	19	3	7	0	17	33
Payment or cash discount	43	64	25	3	7	0	8	11
Small or rush orders	57	71	44	10	7	13	18	10
Method for evaluating:								
Buyer performance	57	86	31	3	7	0	6	8
Purchasing department performance	67	86	50	13	15	13	20	17
Supplier performance	47	64	31	3	7	0	7	11
AVERAGE	52	65	40	10	10	10	20	16
AVERAGE, ALL TOPICS	50	61	39	10	10	9	19	16

Appendix 2-5. Primary Metals (Response: 10 companies with staff, 18 companies without staff)

Research Topics	Percent of Companies Researching Topic						Percent Indicating Most Worth-while Results					
	All Companies Reporting			Only Companies Which Researched This Topic			All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS												
Commodity study	75%	70%	78%	7%	10%	6%	10%	14%	7%			
Correct order quantity	82	80	83	18	10	22	22	13	27			
Demand forecast	61	70	56	11	20	6	18	29	10			
Lease or buy	57	50	61	4	10	0	7	20	0			
Make or buy	61	70	56	4	0	6	6	0	10			
Method of production or manufacture	25	30	22	4	10	0	14	33	0			
New product	46	60	39	11	10	11	23	16	29			
Packaging	68	50	78	18	0	28	26	0	36			
Price forecast	61	60	61	4	15	0	6	16	0			
Pricing procedure or structure	43	40	44	4	0	6	9	0	13			
Scrap disposal	82	90	78	7	0	11	9	0	14			
Specification	64	80	56	21	30	17	33	38	30			
Standardization	75	70	78	25	30	23	33	43	29			
Substitution	61	60	61	7	10	5	12	16	9			
Supply forecast	50	40	56	0	0	0	0	0	0			
Tariff and import regulation	21	20	22	0	0	0	0	0	0			
Transportation	28	40	22	7	0	11	25	0	50			
Value analysis	61	60	61	25	20	27	41	33	45			
ANALYSIS	57	58	56	10	10	9	17	16	18			
VENDORS												
Analysis of financial capacity	54	70	44	4	10	0	7	14	0			
Analysis of production facilities	61	70	56	4	0	6	6	0	10			

Appendix 2-5. Primary Metals (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Topic		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Finding potential supply source	68%	70%	67%	0%	0%	0%	0%	0%
Estimate of distribution costs	7	0	11	0	0	0	0	0
Estimate of manufacturing costs	18	30	11	4	10	0	20	33
Supplier attitude survey	25	20	28	0	0	0	0	0
Trade relations data	75	80	72	18	10	22	24	13
Vendor performance evaluation	39	40	39	4	0	5	9	0
Vendor sales strategy	11	0	17	0	0	0	0	0
AVERAGE	40	44	38	4	4	4	9	8
THE PURCHASING SYSTEM								
Blanket orders	79	90	72	21	20	32	27	22
Data processing equipment	57	60	56	7	10	6	13	17
Forms design	61	70	56	7	0	11	12	0
Formulation of price index	29	40	22	0	0	0	0	0
Inventory control	68	80	61	22	10	27	32	13
Learning curve	11	0	17	0	0	0	0	0
Payment or cash discount	50	70	39	0	0	0	0	0
Small or rush orders	57	80	44	4	0	6	7	0
Method for evaluating:								
Buyer performance	54	60	50	11	0	17	20	0
Purchasing department performance	61	70	56	7	10	6	12	14
Supplier performance	36	30	39	0	0	0	0	0
AVERAGE	51	54	46	7	4	8	14	8
AVERAGE, ALL TOPICS	51	54	49	8	8	6	15	12

Appendix 2-6. Electrical Machinery, Equipment and Supplies (Response: 9 companies with staff, 15 companies without staff)

Research Topics	Percent of Companies						Percent Indicating Most Worth-while Results					
	Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic					
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS												
Commodity study	54%	78%	40%	13%	22%	7%	23%	29%	16%			
Correct order quantity	46	67	33	8	0	13	18	0	40			
Demand forecast	25	33	20	4	0	7	17	0	33			
Lease or buy	42	56	33	4	11	0	10	20	0			
Make or buy	67	100	47	21	22	21	31	22	43			
Method of production or manufacture	33	44	27	13	22	7	38	50	25			
New product	33	56	20	0	0	0	0	0	0			
Packaging	50	56	47	4	0	7	8	0	14			
Price forecast	54	67	47	4	0	7	8	0	14			
Pricing procedure or structure	46	78	27	4	11	0	9	14	0			
Scrap disposal	63	100	40	8	0	13	13	0	33			
Specification	50	89	27	9	11	7	17	12	25			
Standardization	46	67	33	14	11	20	36	16	60			
Substitution	46	56	40	8	22	0	18	40	0			
Supply forecast	38	56	27	0	0	0	0	0	0			
Tariff and import regulation	52	78	20	8	11	7	20	14	33			
Transportation	50	67	40	4	11	0	8	16	0			
Value analysis	50	56	47	21	34	14	42	60	29			
AVERAGE	46	67	34	8	11	7	18	16	21			
VENDORS												
Analysis of financial capacity	58	89	40	0	0	0	0	0	0			
Analysis of production facilities	63	89	47	8	12	7	13	13	14			

Appendix 2-6. Electrical Machinery, Equipment and Supplies (continued)

Research Topics	Percent of Companies Researching Topic			Percent Indicating Most Worth-while Results		
	All Companies			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
Finding potential supply source	67%	89%	53%	9%	0%	13%
Estimate of distribution costs	13	33	0	0	0	0
Estimate of manufacturing costs	46	67	33	4	0	7
Supplier attitude survey	29	44	20	8	11	7
Trade relations data	33	67	13	0	0	0
Vendor performance evaluation	67	100	47	17	22	14
Vendor sales strategy	21	22	20	0	0	0
AVERAGE	44	67	30	5	5	7
THE PURCHASING SYSTEM						
Blanket orders	67	89	53	17	12	20
Data processing equipment	58	100	33	12	22	7
Forms design	46	89	20	8	12	7
Formulation of price index	21	56	0	4	11	0
Inventory control	54	78	40	17	11	20
Learning curve	38	67	20	4	11	0
Payment or cash discount	42	67	27	13	11	14
Small or rush orders	46	67	33	4	11	0
Method for evaluating:						
Buyer performance	54	78	40	4	11	0
Purchasing department performance	63	89	47	21	34	14
Supplier performance	58	78	47	8	0	14
AVERAGE	50	78	33	11	13	9
AVERAGE, ALL TOPICS	47	70	33	8	10	7

Appendix 2-7. Paper (Response: 3 companies with staff, 13 companies without staff)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results			
	Researching Topic		All Companies Reporting		Only Companies Which Researched This Topic	
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS						
Commodity study	56%	67%	54%	31%	66%	23%
Correct order quantity	19	33	15	6	33	0
Demand forecast	19	100	0	6	33	0
Lease or buy	38	67	31	13	67	0
Make or buy	19	33	15	0	0	0
Method of production or manufacture	25	67	15	6	34	0
New product	25	33	23	0	0	0
Packaging	13	0	40	0	0	0
Price forecast	28	100	15	0	0	0
Pricing procedure or structure	25	67	15	6	0	8
Scrap disposal	38	67	31	13	67	0
Specification	38	67	31	6	0	8
Standardization	25	67	15	6	0	8
Substitution	19	0	23	0	0	0
Supply forecast	28	67	23	11	34	8
Tariff and import regulation	0	0	0	0	0	0
Transportation	25	67	15	0	0	0
Value analysis	44	67	38	13	34	8
AVERAGE	27	56	21	6	21	4
VENDORS						
Analysis of financial capacity	25	67	15	0	0	0
Analysis of production facilities	25	67	15	0	0	0

Appendix 2-7 Paper (continued)

Research Topics	Percent Indicating Most Worth-while Results									
	Percent of Companies Researching Topic					All Companies Reporting				
	Total	w/ Staff	67%	w/o Staff	38%	Total	w/ Staff	0%	w/o Staff	8%
	Total	w/ Staff	67%	w/o Staff	38%	Total	w/ Staff	0%	w/o Staff	8%
Finding potential supply source	44%	67%	38%	0%	6%	14%	0%	20%		
Estimate of distribution costs	6	0	8	0	0	0	0	0	0	0
Estimate of manufacturing costs	6	0	8	0	6	100	0	100	0	100
Supplier attitude survey	0	0	0	0	0	0	0	0	0	0
Trade relations data	63	33	69	33	32	50	100	44		
Vendor performance evaluation	38	100	23	8	17	0	33	33	0	33
Vendor sales strategy	0	0	0	0	0	0	0	0	0	0
AVERAGE	23	37	20	4	6	24	10	30		
THE PURCHASING SYSTEM										
Blanket orders	38	33	38	0	6	17	0	20		
Data processing equipment	25	33	23	0	0	0	0	0	0	0
Forms design	44	67	38	13	34	29	50	20		
Formulation of price index	0	0	0	0	0	0	0	0	0	0
Inventory control	63	100	54	25	67	40	67	29		
Learning curve	0	0	0	0	0	0	0	0	0	0
Payment or cash discount	31	33	31	6	0	20	0	25		
Small or rush orders	25	33	23	0	0	0	0	0	0	0
Method for evaluating:										
Buyer performance	25	33	23	0	0	0	0	0	0	0
Purchasing department performance	25	33	23	0	0	0	0	0	0	0
Supplier performance	25	67	15	0	0	0	0	0	0	0
AVERAGE	27	39	24	5	9	17	23	14		
AVERAGE, ALL TOPICS	26	46	21	6	13	22	28	19		

Appendix 2-8. Crude Petroleum and Natural Gas (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Topic		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Finding potential supply source	53%	86%	25%	0%	0%	0%	0%	0%
Estimate of distribution costs	20	29	13	0	0	0	0	0
Estimate of manufacturing costs	13	29	0	0	0	0	0	0
Supplier attitude survey	13	29	0	0	0	0	0	0
Trade relations data	53	86	25	27	43	13	50	50
Vendor performance evaluation	53	86	100	13	28	0	25	33
Vendor sales strategy	20	29	13	7	15	0	33	50
AVERAGE	35	59	14	5	9	1	15	16
THE PURCHASING SYSTEM								
Blanket orders	73	86	63	26	43	13	36	50
Data processing equipment	53	86	25	20	43	0	38	50
Forms design	73	86	63	13	15	13	18	17
Formulation of price index	40	57	25	0	0	0	0	0
Inventory control	47	71	25	14	28	0	29	40
Learning curve	13	29	0	0	0	0	0	0
Payment or cash discount	60	71	50	0	0	0	0	0
Small or rush orders	53	86	25	13	15	13	25	17
Method for evaluating:								
Buyer performance	40	71	13	7	14	0	17	20
Purchasing department performance	47	71	25	7	14	0	14	20
Supplier performance	60	71	13	10	14	0	17	20
AVERAGE	49	71	30	10	17	4	20	24
AVERAGE, ALL TOPICS	42	62	25	10	16	5	23	25

Research Topics	Percent of Companies						Percent Indicating Most Worth-while Results					
	Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic					
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS												
Commodity study	53%	80%	40%	13%	40%	0%	25%	50%	0%			
Correct order quantity	80	100	70	20	0	30	25	0	43			
Demand forecast	47	60	40	0	0	0	0	0	0			
Lease or buy	73	100	60	13	20	10	18	20	17			
Make or buy	73	100	60	7	20	0	9	20	0			
Method of production or manufacture	33	60	20	0	0	0	0	0	0			
New product	53	40	60	13	20	10	25	50	17			
Packaging	53	60	50	27	20	30	50	33	60			
Price forecast	67	80	60	7	0	10	10	0	17			
Pricing procedure or structure	40	60	30	0	0	0	0	0	0			
Scrap disposal	73	80	70	26	20	30	36	25	43			
Specification	40	60	30	7	20	0	17	33	0			
Standardization	60	60	60	20	20	20	33	33	33			
Substitution	73	80	70	13	40	0	18	50	0			
Supply forecast	47	80	30	0	0	0	0	0	0			
Tariff and import regulation	40	60	30	0	0	0	0	0	0			
Transportation	53	60	50	7	20	0	13	33	0			
Value analysis	73	100	60	26	40	20	36	40	33			
AVERAGE	57	73	49	11	15	9	19	21	18			
VENDORS												
Analysis of financial capacity	60	80	50	0	0	0	0	0	0			
Analysis of production facilities	67	100	50	7	0	10	10	0	20			

Appendix 2-9. Fabricated Metal Products (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Companies		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/ Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Finding potential supply source	60%	100%	40%	13%	20%	10%	22%	25%
Estimate of distribution costs	33	60	20	0	0	0	0	0
Estimate of manufacturing costs	27	40	20	0	0	0	0	0
Supplier attitude survey	20	40	10	0	0	0	0	0
Trade relations data	47	60	40	14	20	10	29	33
Vendor performance evaluation	73	100	60	7	0	10	9	0
Vendor sales strategy	27	40	20	0	0	0	0	0
AVERAGE	46	69	34	5	4	4	10	6
THE PURCHASING SYSTEM								
Blanket orders	80	100	70	4	20	54	50	20
Data processing equipment	60	80	50	7	0	10	11	0
Forms design	67	100	50	0	0	0	0	0
Formulation of price index	27	40	20	0	0	0	0	0
Inventory control	53	60	50	20	20	20	38	33
Learning curve	33	40	30	0	0	0	0	0
Payment or cash discount	67	80	60	0	0	0	0	0
Small or rush orders	60	60	60	20	20	20	33	33
Method for evaluating:								
Buyer performance	60	100	40	13	40	0	22	40
Purchasing department performance	60	100	40	13	40	0	22	40
Supplier performance	73	100	60	7	20	0	9	20
AVERAGE	58	78	48	11	15	9	19	19
AVERAGE, ALL TOPICS	55	74	46	9	13	8	17	17

Research Topics	Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results			
			All Companies Reporting		Only Companies Which Researched This Topic	
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS						
Commodity study	97%	100%	88%	25%	75%	0%
Correct order quantity	58	75	50	25	50	13
Demand forecast	50	100	25	8	25	0
Lease or buy	42	75	25	25	25	25
Make or buy	42	75	25	17	25	13
Method of production or manufacture	25	50	13	10	50	0
New product	50	75	38	33	50	25
Packaging	83	100	75	33	50	25
Price forecast	58	100	38	8	25	0
Pricing procedure or structure	25	25	25	8	25	0
Scrap disposal	50	50	50	9	25	0
Specification	67	100	50	17	25	13
Standardization	58	75	50	17	25	13
Substitution	75	100	63	42	50	38
Supply forecast	42	100	13	8	25	0
Tariff and import regulation	17	25	13	0	0	0
Transportation	42	75	25	17	25	13
Value analysis	83	100	75	42	75	25
AVERAGE	53	78	41	20	36	11
VENDORS						
Analysis of financial capacity	33	50	25	0	0	0
Analysis of production facilities	58	100	38	0	0	0

Appendix 2-10. Stone, Clay and Glass Products (continued)

Research Topics	Percent Indicating Most Worth-while Results									
	Percent of Companies Researching Topic		All Companies Reporting				Only Companies Which Researched This Topic			
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total
Finding potential supply source	83%	100%	75%	25%	50%	13%	30%	50%	17%	
Estimate of distribution costs	17	0	25	0	0	0	0	0	0	
Estimate of manufacturing costs	17	0	25	0	0	0	0	0	0	
Supplier attitude survey	17	25	13	0	0	0	0	0	0	
Trade relations data	58	100	38	8	25	0	14	25	0	
Vendor performance evaluation	42	50	38	8	0	13	20	0	33	
Vendor sales strategy	0	0	0	0	0	0	0	0	0	
AVERAGE	36	47	31	5	8	3	13	18	9	
THE PURCHASING SYSTEM										
Blanket orders	83	100	75	17	0	25	20	0	33	
Data processing equipment	42	75	25	0	0	0	0	0	0	
Forms design	67	100	50	25	25	25	38	25	50	
Formulation of price index	33	50	25	0	0	0	0	0	0	
Inventory control	42	75	25	8	25	0	20	33	0	
Learning curve	8	0	13	0	0	0	0	0	0	
Payment or cash discount	42	75	25	0	0	0	0	0	0	
Small or rush orders	58	100	38	8	0	13	14	0	33	
Method for evaluating										
Buyer performance	50	50	50	0	0	0	0	0	0	
Purchasing department performance	50	75	38	8	0	13	17	0	33	
Supplier performance	33	25	38	0	0	0	0	0	0	
AVERAGE	47	68	36	6	5	7	13	7	19	
AVERAGE, ALL TOPICS	47	68	37	12	20	8	25	30	21	

Research Topics	Percent Indicating Most Worth-while Results									
	Percent of Companies Researching Topic		All Companies Reporting		Only Companies Which Researched This Topic					
	Total	w/o Staff	w/o Staff	Total	w/o Staff	Total	w/o Staff	Total	w/o Staff	Total
PURCHASED MATLS, PRODS, SVCS										
Commodity study	70%	100%	67%	30%	0%	33%	43%	0%	50%	
Correct order quantity	80	100	78	20	100	11	25	100	14	
Demand forecast	50	0	56	0	0	0	0	0	0	
Lease or buy	70	0	78	9	0	11	14	0	14	
Make or buy	40	0	44	10	0	11	25	0	25	
Method of production or manufacture	20	0	22	0	0	0	0	0	0	
New product	50	100	44	0	0	0	0	0	0	
Packaging	80	0	89	20	0	22	25	0	25	
Price forecast	80	100	78	0	0	0	0	0	0	
Pricing procedure or structure	50	0	56	10	0	12	20	0	20	
Scrap disposal	80	100	78	10	100	0	13	100	0	
Specification	50	0	56	20	0	22	40	0	40	
Standardization	60	0	67	10	0	11	17	0	17	
Substitution	70	0	78	10	0	11	14	0	14	
Supply forecast	80	100	78	0	0	0	0	0	0	
Tariff and import regulation	10	0	11	0	0	0	0	0	0	
Transportation	60	0	67	10	0	11	17	0	17	
Value analysis	50	0	56	30	0	34	60	0	60	
AVERAGE	58	33	61	10	11	10	18	33	17	
VENDORS										
Analysis of financial capacity	70	100	67	0	0	0	0	0	0	
Analysis of production facilities	70	100	67	0	0	0	0	0	0	

Appendix 2-11. Textile Mill Product and Apparel (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching		All Companies Reporting		Only Companies Which Researched This Topic		w/o Staff	w/o Staff
	Total	w/o Staff	Total	w/o Staff	Total	w/o Staff		
Finding potential supply source	90%	100%	89%	0%	0%	0%	0%	0%
Estimate of distribution costs	30	100	22	0	0	0	0	0
Estimate of manufacturing costs	40	0	44	0	0	0	0	0
Supplier attitude survey	30	0	33	10	0	11	33	0
Trade relations data	40	0	44	0	0	0	0	0
Vendor performance evaluation	50	0	56	10	0	11	20	0
Vendor sales strategy	20	0	22	0	0	0	0	0
AVERAGE	49	44	49	2	0	2	5	5
THE PURCHASING SYSTEM								
Blanket orders	90	100	89	10	0	12	11	0
Data processing equipment	60	100	56	0	0	0	0	0
Forms design	70	100	67	10	100	0	14	100
Formulation of price index	40	0	44	0	0	0	0	0
Inventory control	80	100	78	10	100	0	13	100
Learning curve	0	0	0	0	0	0	0	0
Payment or cash discount	40	100	33	20	100	11	50	100
Small or rush orders	80	100	78	30	100	23	38	100
Method for evaluating:								
Buyer performance	50	0	56	0	0	0	0	0
Purchasing department performance	70	100	67	10	0	11	14	0
Supplier performance	30	0	33	0	0	0	0	0
AVERAGE	55	64	55	8	36	5	15	57
AVERAGE, ALL TOPICS	53	45	56	8	16	7	15	35

Appendix 2-12. Ordnance; Leather; Professional, Scientific, Optical Equipment; Miscellaneous Manufacturing
(Response: 4 companies with staff, 5 companies without staff)

52
88

Research Topics	Percent of Companies						Percent Indicating Most Worth-while Results					
	Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic					
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS												
Commodity study	89%	100%	80%	44%	75%	20%	50%	75%	25%			
Correct order quantity	33	25	40	0	0	0	0	0	0			
Demand forecast	33	25	40	11	25	0	33	100	0			
Lease or buy	67	75	60	11	0	20	17	0	33			
Make or buy	78	75	80	22	50	0	29	67	0			
Method of production or manufacture	67	75	60	22	50	0	33	67	0			
New product	67	50	80	11	25	0	17	50	0			
Packaging	67	100	40	22	50	0	33	50	0			
Price forecast	78	100	60	22	50	0	29	50	0			
Pricing procedure or structure	44	25	60	11	25	0	25	100	0			
Scrap disposal	33	25	40	11	25	0	33	100	0			
Specification	33	25	40	11	0	20	33	0	50			
Standardization	67	50	70	22	25	20	33	50	25			
Substitution	67	75	60	22	50	0	33	67	0			
Supply forecast	56	50	60	22	25	20	40	50	33			
Tariff and import regulation	33	50	20	11	25	0	33	50	0			
Transportation	33	0	60	11	0	20	33	0	33			
Value analysis	67	75	60	45	50	40	67	67	67			
AVERAGE	56	56	57	18	31	9	33	55	16			
VENDORS												
Analysis of financial capacity	78	100	60	0	0	0	0	0	0			
Analysis of production facilities	44	50	40	11	0	20	25	0	50			

Appendix 2-12. Ordnance; Leather; Professional; Scientific, Optical Equipment, Miscellaneous Manufacturing
(continued)

Research Topics	Percent Indicating Most Worth-while Results									
	Percent of Companies Researching Topic			All Companies Reporting			Only Companies Which Researched This Topic			
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	
Finding potential supply source	67%	75%	60%	22%	25%	20%	33%	33%	33%	
Estimate of distribution costs	22	25	20	0	0	0	0	0	0	
Estimate of manufacturing costs	44	75	20	0	0	0	0	0	0	
Supplier attitude survey	56	75	40	11	25	0	20	33	0	
Trade relations data	44	50	40	11	0	20	25	0	50	
Vendor performance evaluation	56	75	40	11	25	0	20	33	0	
Vendor sales strategy	11	0	20	0	0	0	0	0	0	
AVERAGE	47	58	38	8	8	7	16	14	18	
THE PURCHASING SYSTEM										
Blanket orders	67	75	60	34	75	0	50	100	0	
Data processing equipment	67	75	60	11	25	0	17	33	0	
Forms design	56	75	40	11	25	0	20	33	0	
Formulation of price index	33	50	20	11	25	0	33	50	0	
Inventory control	33	50	20	0	0	0	0	0	0	
Learning curve	22	25	20	11	25	0	50	100	0	
Payment or cash discount	33	50	20	0	0	0	0	0	0	
Small or rush orders	67	100	40	34	75	0	50	75	0	
Method for evaluating:										
Buyer performance	67	100	40	22	25	20	33	25	50	
Purchasing department performance	78	100	60	23	25	20	29	25	33	
Supplier performance	67	100	40	11	25	0	17	25	0	
AVERAGE	54	73	38	15	30	4	28	41	10	
AVERAGE, ALL TOPICS	53	61	47	15	25	7	28	41	15	

Appendix 2-13. Mining (continued)

Research Topics	Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results					
			All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Finding potential supply source	57%	100%	40%	0%	0%	0%	0%	0%
Estimate of distribution costs	14	50	0	0	0	0	0	0
Estimate of manufacturing costs	0	0	0	0	0	0	0	0
Supplier attitude survey	14	50	0	0	0	0	0	0
Trade relations data	57	50	60	29	50	20	50	100
Vendor performance evaluation	29	50	20	15	50	0	50	100
Vendor sales strategy	0	0	0	0	0	0	0	0
AVERAGE	25	44	18	5	11	2	19	25
THE PURCHASING SYSTEM								
Blanket orders	71	100	60	14	0	20	20	0
Data processing equipment	29	50	20	15	0	20	50	0
Forms design	57	50	60	0	0	0	0	0
Formulation of price index	14	0	20	0	0	0	0	0
Inventory control	57	100	40	43	100	23	75	100
Learning curve	0	0	0	0	0	0	0	0
Payment or cash discount	43	100	20	0	0	0	0	0
Small or rush orders	43	50	40	0	0	0	0	0
Method for evaluating:								
Buyer performance	29	50	20	0	0	0	0	0
Purchasing department performance	29	50	20	0	0	0	0	0
Supplier performance	29	50	20	0	0	0	0	0
AVERAGE	36	55	29	6	9	6	18	17
AVERAGE, ALL TOPICS	29	50	21	5	12	2	17	24

Appendix 2-14. Petroleum Refining (Response: no companies with staff, 6 companies without staff)

Research Topics	Percent of Companies				Percent Indicating Most Worth-while Results			
	Researching Topic		All Companies Reporting		Only Companies Which Researched This Topic			
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
PURCHASED MATLS, PRODS, SVCS								
Commodity study	50%	--	50%	0%	--	0%	0%	0%
Correct order quantity	67	--	67	0	--	0	0	0
Demand forecast	33	--	33	0	--	0	0	0
Lease or buy	50	--	50	0	--	0	0	0
Make or buy	17	--	17	0	--	0	0	0
Method of production or manufacture	0	--	0	0	--	0	0	0
New product	17	--	17	0	--	0	0	0
Packaging	67	--	67	34	--	34	50	50
Price forecast	50	--	50	0	--	0	0	0
Pricing procedure or structure	33	--	33	0	--	0	0	0
Scrap disposal	50	--	50	15	--	0	0	0
Specification	50	--	50	0	--	0	0	0
Standardization	50	--	50	34	--	34	67	67
Substitution	67	--	67	17	--	17	25	25
Supply forecast	50	--	50	0	--	0	0	0
Tariff and import regulation	17	--	17	0	--	0	0	0
Transportation	33	--	33	0	--	0	0	0
Value analysis	50	--	50	17	--	17	33	33
AVERAGE	42	--	42	5	--	5	13	13
VENDORS								
Analysis of financial capacity	67	--	67	0	--	0	0	0
Analysis of production facilities	50	--	50	0	--	0	0	0

Appendix 2-14. Petroleum Refining (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results			
	Researching		All Companies		Only Companies Which	
	Total	w/ Staff	Total	w/ Staff	Total	w/ Staff
Topic		Staff		Staff		Staff
Finding potential supply source	33%	--	0%	--	0%	--
Estimate of distribution costs	0	--	0	--	0	--
Estimate of manufacturing costs	17	--	0	--	0	--
Supplier attitude survey	17	--	0	--	0	--
Trade relations data	67	--	17	--	25	--
Vendor performance evaluation	67	--	0	--	0	--
Vendor sales strategy	0	--	0	--	0	--
AVERAGE	35	--	2	--	5	--
THE PURCHASING SYSTEM						
Blanket orders	67	--	0	--	0	--
Data processing equipment	0	--	0	--	0	--
Forms design	67	--	0	--	0	--
Formulation of price index	17	--	0	--	0	--
Inventory control	67	--	34	--	50	--
Learning curve	0	--	0	--	0	--
Payment or cash discount	33	--	0	--	0	--
Small or rush orders	33	--	0	--	0	--
Method for evaluating:						
Buyer performance	33	--	0	--	0	--
Purchasing department performance	33	--	0	--	0	--
Supplier performance	17	--	0	--	0	--
AVERAGE	33	--	3	--	9	--
AVERAGE, ALL TOPICS	38	--	4	--	10	--

Research Topics	Percent of Companies Researching Topic		Percent Indicating Most Worth-while Results						
			All Companies Reporting		Only Companies Which Researched This Topic				
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS									
Commodity study	33%	--	33%	17%	--	17%	50%	--	50%
Correct order quantity	17	--	17	0	--	0	0	--	0
Demand forecast	17	--	17	0	--	0	0	--	0
Lease or buy	17	--	17	0	--	0	0	--	0
Make or buy	33	--	33	0	--	0	0	--	0
Method of production or manufacture	0	--	0	0	--	0	0	--	0
New product	17	--	17	0	--	0	0	--	0
Packaging	17	--	17	0	--	0	0	--	0
Price forecast	33	--	33	0	--	0	0	--	0
Pricing procedure or structure	0	--	0	0	--	0	0	--	0
Scrap disposal	0	--	0	0	--	0	0	--	0
Specification	0	--	0	0	--	0	0	--	0
Standardization	0	--	0	0	--	0	0	--	0
Substitution	33	--	33	0	--	0	0	--	0
Supply forecast	0	--	0	0	--	0	0	--	0
Tariff and import regulation	0	--	0	0	--	0	0	--	0
Transportation	0	--	0	0	--	0	0	--	0
Value analysis	17	--	17	17	--	17	100	--	100
AVERAGE	13	--	13	2	--	2	14	--	14
VENDORS									
Analysis of financial capacity	0	--	0	0	--	0	0	--	0
Analysis of production facilities	33	--	33	0	--	0	0	--	0

Appendix 2-15. Rubber and Plastics (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results			
	Researching		All Companies		Only Companies Which	
	Total	w/ Staff	Total	w/ Staff	Total	w/ Staff
Topic	Staff	Staff	Staff	Staff	Staff	Staff
Finding potential supply source	33%	--	33%	--	0%	--
Estimate of distribution costs	0	--	0	--	0	--
Estimate of manufacturing costs	17	--	17	--	0	--
Supplier attitude survey	0	--	0	--	0	--
Trade relations data	50	--	50	--	17	--
Vendor performance evaluation	0	--	0	--	0	--
Vendor sales strategy	0	--	0	--	0	--
AVERAGE	17	--	17	--	4	--
THE PURCHASING SYSTEM						
Blanket orders	17	--	17	--	17	--
Data processing equipment	50	--	50	--	0	--
Forms design	17	--	17	--	0	--
Formulation of price index	0	--	0	--	0	--
Inventory control	0	--	0	--	0	--
Learning curve	0	--	0	--	0	--
Payment or cash discount	0	--	0	--	0	--
Small or rush orders	0	--	0	--	0	--
Method for evaluating:						
Buyer performance	0	--	0	--	0	--
Purchasing department performance	17	--	17	--	0	--
Supplier performance	17	--	17	--	0	--
AVERAGE	11	--	11	--	2	--
AVERAGE, ALL TOPICS	13	--	13	--	2	--

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
			Researching Topic		All Companies Reporting		Only Companies Which Researched This Topic	
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
PURCHASED MATLS, PRODS, SVCS								
Commodity study	20%	0%	25%	20%	0%	25%	100%	0%
Correct order quantity	40	0	50	0	0	0	0	0
Demand forecast	0	0	0	0	0	0	0	0
Lease or buy	80	100	75	0	0	0	0	0
Make or buy	60	100	50	40	100	25	67	100
Method of production or manufacture	0	0	0	0	0	0	0	0
New product	60	0	75	0	0	0	0	0
Packaging	40	100	25	20	0	100	50	0
Price forecast	20	0	25	0	0	0	0	0
Pricing procedure or structure	40	0	50	0	0	0	0	0
Scrap disposal	40	100	25	0	0	0	0	0
Specification	20	0	25	0	0	0	0	0
Standardization	60	100	50	40	100	25	67	100
Substitution	20	0	25	0	0	0	0	0
Supply forecast	20	0	25	0	0	0	0	0
Tariff and import regulation	0	0	0	0	0	0	0	0
Transportation	60	100	50	20	0	25	33	0
Value analysis	60	100	50	0	0	0	0	0
AVERAGE	36	39	35	8	11	7	22	29
VENDORS								
Analysis of financial capacity	40	0	50	0	0	0	0	0
Analysis of production facilities	60	0	75	0	0	0	0	0

Appendix 2-16. Lumber and Wood Products (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Topic		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Finding potential supply source	60%	100%	50%	0%	0%	0%	0%	0%
Estimate of distribution costs	0	0	0	0	0	0	0	0
Estimate of manufacturing costs	0	0	0	0	0	0	0	0
Supplier attitude survey	20	0	25	0	0	0	0	0
Trade relations data	60	100	50	20	0	25	33	0
Vendor performance evaluation	40	100	25	0	0	0	0	0
Vendor sales strategy	0	0	0	0	0	0	0	0
AVERAGE	31	33	31	2	0	3	7	0
THE PURCHASING SYSTEM								
Blanket orders	40	0	50	0	0	0	0	0
Data processing equipment	60	100	50	0	0	0	0	0
Forms design	60	100	50	20	0	25	33	0
Formulation of price index	40	0	50	0	0	0	0	0
Inventory control	60	100	50	20	0	25	33	0
Learning curve	0	0	0	0	0	0	0	0
Payment or cash discount	20	0	25	0	0	0	0	0
Small or rush orders	0	0	0	0	0	0	0	0
Method for evaluating:								
Buyer performance	0	0	0	0	0	0	0	0
Purchasing department performance	40	100	25	0	0	0	0	0
Supplier performance	20	0	25	0	0	0	0	0
AVERAGE	31	36	30	4	0	5	12	0
AVERAGE, ALL TOPICS	33	37	32	5	5	5	16	14
								16

Appendix 2-17. Printing and Publishing (Response: no companies with staff, 5 companies without staff)

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Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results			
	Researching Topic		All Companies Reporting		Only Companies Which Researched This Topic	
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff
PURCHASED MATLS, PRODS, SVCS						
Commodity study	60%	--	60%	0%	--	0%
Correct order quantity	60	--	60	20	--	33
Demand forecast	20	--	20	0	--	0
Lease or buy	60	--	60	40	--	67
Make or buy	40	--	40	40	--	100
Method of production or manufacture	20	--	20	0	--	0
New product	40	--	40	20	--	50
Packaging	40	--	40	0	--	0
Price forecast	60	--	60	0	--	0
Pricing procedure or structure	0	--	0	0	--	0
Scrap disposal	40	--	40	20	--	50
Specification	40	--	40	0	--	0
Standardization	40	--	40	0	--	0
Substitution	40	--	40	20	--	50
Supply forecast	40	--	40	20	--	50
Tariff and import regulation	0	--	0	0	--	0
Transportation	40	--	40	0	--	0
Value analysis	60	--	60	20	--	33
AVERAGE	39	--	39	11	--	29
VENDORS						
Analysis of financial capacity	60	--	60	0	--	0
Analysis of production facilities	60	--	60	20	--	33

Appendix 2-17. Printing and Publishing (continued)

Research Topics	Percent of Companies		Percent Indicating Most Worth-while Results					
	Researching Topic		All Companies Reporting			Only Companies Which Researched This Topic		
	Total	w/ Staff	w/o Staff	Total	w/ Staff	w/o Staff	Total	w/ Staff
Finding potential supply source	60%	--	60%	0%	--	0%	0%	0%
Estimate of distribution costs	0	--	0	0	--	0	0	0
Estimate of manufacturing costs	0	--	0	0	--	0	0	0
Supplier attitude survey	40	--	40	0	--	0	0	0
Trade relations data	20	--	20	20	--	20	100	100
Vendor performance evaluation	40	--	40	0	--	0	0	0
Vendor sales strategy	0	--	0	0	--	0	0	0
AVERAGE	31	--	31	4	--	4	14	14
THE PURCHASING SYSTEM								
Blanket orders	40	--	40	0	--	0	0	0
Data processing equipment	20	--	20	0	--	0	0	0
Forms design	60	--	60	0	--	0	0	0
Formulation of price index	20	--	20	0	--	0	0	0
Inventory control	40	--	40	0	--	0	0	0
Learning curve	0	--	0	0	--	0	0	0
Payment or cash discount	40	--	40	20	--	20	50	50
Small or rush orders	60	--	60	40	--	40	67	67
Method for evaluating:								
Buyer performance	60	--	60	0	--	0	0	0
Purchasing department performance	20	--	20	0	--	0	0	0
Supplier performance	40	--	40	0	--	0	0	0
AVERAGE	36	--	36	7	--	7	20	20
AVERAGE, ALL TOPICS	36	--	36	8	--	8	23	23

APPENDIX 3-1

Position Title: Purchasing Research Analyst

1. BASIC FUNCTION

To carry out purchasing research studies of specific commodities, of market conditions and of industries to assist in the development and formation of purchasing policies, plans and programs and to provide management with information or recommendations pertinent to purchasing factors to be considered in reaching their decisions.

2. RESPONSIBLE TO

The Purchasing Research Analyst is responsible to the Director of Purchases for planning the research studies, developing the factual data required, analyzing the data and preparing informative reports and recommendations for his approval.

3. STAFF ASSIGNED

Staff Assistant - Commodity Research
Staff Assistant - Commodity Value Analysis
Secretary

4. RESPONSIBILITIES

- a. Plan the research studies required by the Director and Assistant Director of Purchases; the commodity sections, General Purchasing; and Division Purchasing Agents.
- b. Develop and follow a schedule for completing the work involved and obtain approvals for the planned studies.
- c. Prepare and publish commodity studies of major items purchased by the company. Such studies might include:
 - 1) Historical development of the product.
 - 2) Extent of production facilities.
 - 3) Raw materials costs.
 - 4) Quantities required as related to end products made from the material (Company and other).

Position Title: Purchasing Research Analyst (cont.)

- 5) Current and future availability of material reserves and production capacity.
 - 6) History of price structure and its relationship to supply and demand factors.
 - 7) Prices and availability of related or substitute materials.
 - 8) Projections of pertinent factors to the point of reaching possible conclusions that can be used in decision-making and future planning.
- d. Prepare and publish studies directed towards providing information and developing recommendations required for management decisions. Such studies might include:
- 1) Value analyses for commodity purchases.
 - 2) Determination and evaluation of factors involved in decisions to make or buy company requirements.
 - 3) Trends in price and supply and demand factors affecting long-term future prices and availability of materials as a guide for procurement of future requirements and informing interested parties as to possible changes in inventory planning, production planning, and sales policies and pricing.
 - 4) Development of new sources of supply through comprehensive industry studies.
 - 5) Statistical reports of purchasing activities.
- e. Prepare regular monthly reports as requested by the Director or Assistant Director of Purchases. Such reports might include:
- 1) Status of purchasing activities.
 - 2) Major accomplishments and unusual activities.
 - 3) Short-term trends and forecasts of prices and availability of major purchases.

- 4) Immediate purchasing plans or programs.
- f. Assist commodity sections, General Purchasing, in obtaining facts and statistics necessary to make daily purchasing decisions.
- g. Supervise the activities of the staff assigned.
- h. Perform other duties as assigned by the Assistant Director of Purchases.

APPENDIX 3-2

Position Title: Manager - Purchasing Research

Reports To: Assistant to Vice President - Purchases

Scope of Position

Coordinates and directs activities of Purchasing Division concerned with increasing efficiency of purchasing operations and obtaining maximum potential effect of each dollar expended for purchased goods and services, through planning and program development, commercial and product research, and value analysis of purchased acquisitions.

Duties

Planning and Program Development

1. Designs and institutes programs for the evaluation of the performance of procurement duties.
2. Analyzes operations of the Purchasing Division and prepares studies of improved techniques, systems, and controls.
3. Contacts Purchasing executives of other companies to ascertain method employed in executing procurement responsibilities, and determines applicability of such methods.
4. Develops methods of performing operations incidental to actual procurement, for the purpose of increased efficiency and reduction in administrative expense.
5. Designs and administers Cost Reduction Program of the Purchasing Division.
6. Reviews, interprets, and controls development of statistical reports and information required by the Purchasing Division.
7. Is responsible for coordination of information on the acquisition and delivery of major purchase requirements with consumption rate and standard inventory levels to maintain proper balance of procurement with availability of requirements.

Position Title: Manager - Purchasing Research (cont.)

8. Represents the Purchasing Division in development of programs concerned with disposal of surplus and waste purchased materials, including salvage activities.
9. Prepares reports, such as the weekly report to the Executive Vice President, outlining the current situation on major items which are the responsibility of the Purchasing Division.
10. Coordinates, reviews, and furnishes price forecast data required by Accounting Department from Purchasing for use in revising standard costs.
11. Coordinates and reviews price data furnished each month by the Purchasing Division to Cost and Statistics Division for use in preparing price indexes of purchased products and services. Analyzes and prepares for Purchasing management reports and statements on what the change in the index means in the cost of purchased goods and services.

Commercial Research

12. Evaluates source of supply of purchased goods and services in terms of vendor performance, facilities and capacity to produce, industry reports and vendor statements, by coordinating information concerning suppliers from other Corporation departments with such information from the Purchasing Division, and by direct contact with suppliers and visitations to their plants. Also assists in the development of new sources of supply for purchased commodities.
13. Ascertains and investigates new products and materials introduced on the market and determines the possibility of satisfying procurement needs more effectively or more efficiently with such products or materials.
14. Analyzes and interprets trends of business in general and supply-demand relationship of specific purchased commodities.
15. Analyzes prices of purchased commodities in terms of market conditions and cost of production.
16. Prepares long-range economic studies concerning major purchased commodities to assist in resolution of procurement policy. Such studies involve contacts with suppliers, industry associations and governmental agencies.

Position Title: Manager - Purchasing Research (cc.)

Value Analysis

17. Designs, establishes, and develops on behalf of the Purchasing Division, programs and projects concerned with evaluating the quality of purchased commodities, including considerations of standardization, specifications, substitution, inspection, and testing of such commodities. Coordinates commercial considerations of Purchasing Division with considerations of other departments regarding the use of purchased commodities to obtain maximum economic advantage through the Purchasing function.
18. Is responsible for development and execution of projects in the Purchasing Division concerned with obtaining greater value in purchased goods and services through analysis of product design, packaging, transportation, manufacturing methods, and materials handling. Contacts sales and operating executives of suppliers and industry and trade associations, and works with executives of other departments in performance of these functions.

APPENDIX 3-3

Position Title: Staff Assistant - Commodity Studies

1. BASIC FUNCTION

To carry out, as assigned, specific phases of purchasing research studies of commodities and industries, maintain statistical records, prepare statistical reports, assist the Purchasing Research Manager in the preparation of reports covering purchasing research studies and perform other work assigned by the Purchasing Research Manager.

2. RESPONSIBLE TO

The Staff Assistant - Commodity Studies is responsible to the Purchasing Research Manager for carrying out the assigned functions.

3. STAFF ASSIGNED

None

4. RESPONSIBILITIES

- a. Prepare or assist in the preparation of commodity studies of major items purchased by the Company. Such studies might include but are not limited to:
 - 1) Historical development of the product.
 - 2) Extent, types and locations of production facilities existing and planned throughout the world.
 - 3) Costs of raw materials required to make the product.
 - 4) Quantities required as related to end products made from the material.
 - 5) History of price structure and its influence on and relationship to supply and demand factors.
 - 6) Prices and availability of related or substitute materials.
 - 7) Current and future availability of material reserves and production capacity.

Position Title: Staff Assistant - Commodity Studies (Cont.)

- b. Prepare and assist in the preparation of studies directed towards providing information and developing recommendations required for management decisions. Such studies might include but are not limited to:
 - 1) Determination and evaluation of factors involved in decisions to make or buy Company requirements.
 - 2) Trends in price and supply and demand factors affecting long-term future prices and availability of materials as a guide for sales policies and pricing, inventory planning, production planning and procurement of future requirements.
 - 3) Development of new sources of supply through comprehensive industry studies.
 - 4) Statistical reports of purchasing activities.
- c. Maintain statistical records needed to perform other purchasing research functions.
- d. Prepare all or part of regular monthly reports as assigned.
- e. Assist commodity sections, General Purchasing, in obtaining facts and statistics necessary to make daily purchasing decisions.
- f. Perform other duties as assigned by the Purchasing Research Manager.

APPENDIX 3-4

Position Title: Purchasing Analyst

Reports To: Manager - Purchasing Research

Scope of Position

To gather, analyze, evaluate, summarize and present information on purchase contracts and procedures, and on the acquisition, delivery, inventory, performance and testing of purchase commodities, which will assist in guiding Purchasing Division decisions concerned with obtaining greater value in purchased goods and services.

To develop, prepare, and coordinate special studies and analyses of purchasing and related activities as required to assist the Manager - Purchasing Research in discharging his responsibilities to line and staff activities.

Duties

1. Assists the Manager - Purchasing Research in designing, administering, and reporting the results of programs for the reduction of purchase costs and the measurement of cost reduction performance.
2. Develops and recommends improved methods and procedures of performing operations incidental to actual procurement, in order to increase efficiency and reduce administrative expenses.
3. Designs and prepares control charts, graphs, and summarized reports related to purchasing matters, including a "Commodities Manual" covering the most important purchased commodities.
4. Reviews, analyzes, coordinates, and recommends changes in the Purchasing Statistics Programs as an aid to buying personnel in measuring the placement of business to the Company's best advantage.

Position Title: Purchasing Analyst (Cont.)

5. Prepares upon assignment both short and long-range studies covering the availability, price, and quality of major purchased commodities to assist in resolution of procurement policy. Such studies entail research into natural resources and reserves, production methods and facilities, distribution, exports and imports, prices and price indices, financial structure of the particular industry, consumption, competitive commodities, and technological developments. These data are ascertained from government, trade, and industry publications and by personal contact with responsible persons in the industry.
6. Upon assignment, develops, analyzes, evaluates, and makes recommendations based upon considerations of making or buying items required.
7. As assigned, receives and investigates problems concerning the price, transportation, handling, packaging, use or performance of purchased items, and develops and recommends alternatives for relieving or eliminating such problems. Through discussions with line purchasing and with supplier representatives, company specialists as required, and through independent academic research, he assembles an integrated picture of all pertinent information from which he draws intelligent conclusions and submits practical recommendations.
8. Develops and, as necessary secures clearance for, replies to requests for information regarding company on purchasing operations as received from other companies, stockholders, students, or individuals.
9. Assists Purchasing Division management upon request in the preparation of speeches, the development of articles for publication, the short-notice assembly of facts on a particular subject, or the interpretation of statistical reports.
10. Assists the Manager, Purchasing Research in the performance of his varied responsibilities as may be required.

BIBLIOGRAPHY

Books and Reports

Aljian, George W. (ed.). Purchasing Handbook. New York: McGraw-Hill Book Company, Inc., 1958.

Babbage, Charles. On the Economy of Machinery and Manufacturers. 2nd ed. London: Charles Knight, 1832.

Bull, Albert E. Buying Goods: The Commercial Buyer and His Work. London: Sir Isaac Pitman & Sons, Ltd., 1922.

Cartmell, Madison. Stores and Material Control, Including Procurement by Manufacture and by Purchase. New York: Ronald Press Company, 1922.

Church, Alexander Hamilton. The Making of an Executive. Book II, Part 4, "Purchasing and Storekeeping." Scranton, Pennsylvania: International Textbook Company, 1922.

Crisp, Richard D. Company Practices in Marketing Research. Research Report No. 22. New York: American Management Association, 1953.

Cutting Costs by Analyzing Values. New York: National Association of Purchasing Agents, 1952.

Dale, Ernest. Planning and Developing the Company Organization Structure. Research Report No. 20. New York: American Management Association, 1952.

Dinsmore, John C. Purchasing: Principles and Practices. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1922.

1961 Dun and Bradstreet Million Dollar Directory. New York: Dun and Bradstreet, Inc., 1960.

Farquhar, Henry H. Factory Storeskeeping: The Control and Storage of Materials. New York: McGraw-Hill Book Company, Inc., 1922.

Gushée, Edward Tisdale and Boffey, Lionel Frank. Scientific Purchasing. New York: McGraw-Hill Book Company, Inc., 1928.

- Haas, George H., March, Benjamin, and Krech, E. M. Purchasing Department Organization and Authority. AMA Research Study 45. New York: American Management Association, 1960.
- Harriman, Norman F. Principles of Scientific Purchasing. New York: McGraw-Hill Book Company, Inc., 1928.
- Hodges, Henry G. Procurement: The Modern Science of Purchasing. New York: Harper & Brothers, 1961.
- Hysell, Helen. The Science of Purchasing. New York: D. Appleton and Co., 1922.
- Improving Staff and Line Relationships. Studies in Personnel Policy No. 153. New York: National Industrial Conference Board, 1956.
- Kett, H. T., et al. Book on Buying. (The Business Man's Library, Vol. V.) New York: The System Company, 1905.
- Kirkman, Marshall M. The Handling of Railway Supplies--Their Purchase and Disposition. Chicago: Chas. N. Trivess, 1887.
- Lewis, Howard T., and England, Wilbur B. Procurement: Principles and Cases. 3rd ed. Homewood, Illinois: Richard D. Irwin, Inc., 1957.
- Lewis, J. Slater. The Commercial Organization of Factories. London: E. & F. N. Spon, 1896.
- Materials and Supplies. "The Factory Management Series," Chicago: A. W. Shaw Company, 1915.
- Mitchell, William Norman. Purchasing. New York: Ronald Press Company, 1927.
- Murphy, Harry Duncan. The Fundamental Principles of Purchasing. New York: The Purchasing Agent Company, Inc., 1924.
- Organization of Staff Functions. Studies in Personnel Policy No. 165. New York: National Industrial Conference Board, 1958.
- Pearce, H. C. The Supply Department. New York: Railway Age Gazette, 1911.

Mass, George H., March, Benjamin
Department Organization
42. New York: American

Watkins, Norman F. Principles and Practice of Purchasing
New York: McGraw-Hill

Bodges, Henry E. Principles and Practice of Purchasing
Chattanooga, New York:

Hyatt, Helen. The Supply Department
Appleton and Co., Inc.

Improving Staff and Line Functions
Policy No. 133. Board, 1936.

Kaplan, H. T., et al. Library, Vol. V

Kirkman, Marshall M. Purchasing and Distribution
1937.

Lewis, Howard T., and E. W. Principles and Practice of Purchasing
Richard D. Lewis, Inc.

Lewis, J. Slater. The Company
London: E. & F. N. Spon

Materials and Supplies. "The
Chicago: A. W. Shaw Company

MacNeill, William Norman. Principles and Practice of Purchasing
Press Company, 1937.

Murphy, Harry Duncan. The Engineering Department
New York: The Purchasing Agent

Organization of Staff Functions. Studies in the Supply Department
No. 163. New York: National Industrial Conference Board,
1938.

Reese, H. C. The Supply Department. New York: McGraw-Hill
Age Gazette, 1911.

Poor's Register of Directors and Executives: United States and Canada, 1961. New York: Standard and Poor's Corporation, 1961.

Purchasing for Industry. Studies in Business Policy No. 33. New York: National Industrial Conference Board, 1948.

Purchasing for Profit. AMA Management Report No. 20. New York: American Management Association, 1958.

Rindsfoos, C. S. Purchasing. New York: McGraw-Hill Book Company, Inc., 1915.

Sampson, Robert C. The Staff Role in Management. New York: Harper & Brothers, 1955.

Standard Advertising Register. Vol. XLV. New York: National Register Publishing Company, Inc., April, 1960.

A Survey of Marketing Research: Organization, Functions, Budget, Compensation. Chicago: American Marketing Association, 1958.

Twyford, H. B. Purchasing--Its Economic Aspect and Proper Methods. New York: D. Van Nostrand Co., 1915.

_____. Purchasing and Storing. (Factory Management Course, Vol. IV.) New York: Industrial Extension Institute, 1921.

Value Engineering. Elizabeth, N.J.: Engineering Publishers, 1959.

Westing, J. H. and Fine, I. V. Industrial Purchasing. 2nd ed. New York: John Wiley & Sons, Inc., 1961.

Articles

Ammer, Dean. "Purchasing Coordinates Plant-Wide V-A Program," Purchasing, XLV, December 8, 1958.

_____. "The Purchasing Department: Ford's Cost Control Center," Purchasing, XLVIII, May 23, 1960.

Arnold, Horace L. "Purchase by the Organized Factory," The Engineering Magazine, XXV, June, 1903.

Browning, Albert J. "Purchasing--A Challenge and an Opportunity," Purchasing, XXIII, December, 1947.

Bryant, C. Willard. "Planning To Meet Materials Shortage . . . the Function of Purchasing Research," Purchasing, XXXV, August, 1953.

Cady, E. L. "How Purchase Engineers Function," Purchasing, XX, April, 1946.

Cremer, James M. "The Engineer as a Purchasing Agent," Cassier's Magazine, XXXIV, August, 1908.

"Current Topics," Cassier's Magazine, XIV, April, 1901.

"Current Topics," Cassier's Magazine, XXIV, June, 1903.

"Current Topics," Cassier's Magazine, XXVI, September, 1904.

Davis, Keith. "Frictions in Human Relations, A Study in Staff-Line Relationships," Business Horizons, School of Business, Indiana University, December, 1956.

Delaney, J. B. "Purchasing: Research Gets Staff Status in Broad Program of U. S. Steel," Iron Age, CLXX, December 11, 1952.

Diemer, Hugo. "Functions and Organization of the Purchasing Department," The Engineering Magazine, XVIII, March, 1900.

Ennis, William D. "The Relation of Purchasing to Production," The Engineering Magazine, XXIX, July, 1905.

Erlicher, Harry L. "Purchasing for Greater Value," Purchasing, XXVII, August, 1949.

"The Fortune Directory: The 500 Largest U.S. Industrial Corporations," Fortune, LXII, July, 1960.

"General Electric's Program Still Sets the Pace," Purchasing, XLII, May, 1957.

Hornbach, R. F. "Planning a Cost Reduction Program," Purchasing, XXXVI, May, 1954.

"How Brain Trusters Span P.A.--Engineering Gaps by Purchasing Research," Purchasing Week, IV, April 10, 1961.

News, Albert J. "Purchasing
Country," Purchasing, 1953.

Byrd, C. Willard. "The
The Function of Purchasing
Magazine, 1953.

Byrd, E. L. "How Purchasing
XX, April, 1946.

Cramer, James M. "The
Cramer's Magazine.

"Current Topics," Current Topics.

"Current Topics," Current Topics.

"Current Topics," Current Topics.

Davis, Keith. "Purchasing
Steel-Line Relations
Business, Indiana

Deaney, J. B. "Purchasing
Road Program of
II, 1953.

Dinner, Hugo. "Functions
Department," The Engineering.

Engle, William D. "The Role
The Engineering Magazine.

Elischer, Harry L. "Purchasing
XXVII, August, 1953.

"The Fortune Directory: The 500
Corporations," Fortune, LXII, 1953.

"General Electric's Program Still Aids the
LII, May, 1957.

Hornbach, E. F. "Planning a Cost Reduction
XIXVI, May, 1954.

"How Brain Research Spans R.A.--Engineering Data by
Research," Engineering Week, IV, April 10, 1951.

"The Hundred Largest 'Salesmen,'" First National City Bank Monthly Letter: Business and Economic Conditions, New York: September, 1959.

Kellogg, Ned. "The Forward Look in Purchasing," Purchasing, XLIV, January 20, 1958.

Leonard, James H. "The Coming of Age of Value Analysis," New York Purchasing Review, July, 1960.

Lottman, Victor G. "Cost Reduction Through Purchasing," Purchasing, XXV, August, 1948.

_____. "Research Leads to Sound Purchasing Policies," Purchasing, XXV, July, 1948.

_____. "The Techniques of Cost Reduction," Purchasing, XXV, November, 1948.

"Machine Shop Notes," The Engineering Magazine, IV, December, 1892.

"Machine Shop Practice," The Engineering Magazine, VI, October, 1893.

"Market Research for the Buyer," Chemical and Engineering News, XXXII, October 4, 1954.

Morse, William H. "The Purchasing Agent and High-Class Product," The Engineering Magazine, XLIX, June, 1915.

Nuckols, J. Cecil. "A Complete System for the Purchasing Department," The Engineering Magazine, XXXV, April, 1908.

"A One-Man Value Analysis Unit," Purchasing, XL, June, 1956.

"Organization for Purchasing," Purchasing, XXV, July, 1948.

"Purchase Analysis Cuts Costs, Sharpens Buying Skills," Purchasing, XLVII, November 9, 1959.

"Purchase Analysis Helps Determine . . . the Right Product . . . the Right Source . . . the Right Price," Purchasing, XXV, July, 1948.

"Purchase Analysis Improves Competitive Position," Purchasing, XLIII, November, 1957.

- "The Hundred Largest Salesmen
Monthly Letter, Business
September, 1939.
- Kallogg, Ned. "The Forwarding
XLIV, January 30, 1939.
- Leonard, James H. "The
New York Purchasing
Lottman, Victor G. "The
Purchasing, XXV, 1939.
- "Research Leads
Purchasing, XXV, 1939.
- "The Technician
November, 1948.
- "Machine Shop Notes,
1937.
- "Machine Shop Practice,
October, 1937.
- "Market Research for the
News, XXXII, October 1937.
- More, William H. "The Purchasing
Product," The Engineering
Mackals, J. Cecil. "A Company
Department," The Engineering
A One-Man Value Analysis Unit,
"Organization for Purchasing,"
Purchasing Analysis Costs, Sharpe,
Purchasing, XLVII, November 9, 1948.
- "Purchasing Analysis Helps Determine
the Right Source . . . the Right Price,"
July, 1948.
- "Purchasing Analysis Improves Competitive Position,"
XIII, November, 1937.

- "Purchase Analysis in Action," Steel, CXLI, July 8, 1957.
- "Purchase Analysis: It's a Job for Buyers," Purchasing, XLIX, July 18, 1960.
- "Purchase Analysis More than Pays Its Way," Purchasing, XL, April, 1956.
- "Purchase Analysis Savings Run into Six Figures," Purchasing, XXX, June, 1951.
- "Purchase Analysts Save Money for Ford," American Business, XX, January, 1950.
- "The Purchase and Inspection of Railroad Supplies," The Railroad Gazette, XXX, 1898.
- "Purchase Research for More New Products," Purchasing, XLVII, September 14, 1959.
- "Purchasing Building Materials," The Manufacturer and Builder, XI, February, 1870.
- "Purchasing and Care of Supplies," The Railroad Gazette, XXII, 1890.
- "Purchasing at Kaiser Aluminum," Purchasing, XLVI, March 16, 1959.
- "Purchasing for Profit Saves Over \$5,000,000," Purchasing, XLIV, February 17, 1958.
- "Purchasing Research," Purchasing, XXXVIII, May, 1955.
- "Purchasing Research Brings Big Profits," Purchasing, XLVI, January 19, 1959.
- "Purchasing Spearheads Value Analysis Program," Purchasing, XLV, December 22, 1959.
- "Purchasing's Stake in Value Analysis," Purchasing, XLVI, June 8, 1959.
- Quinn, Richard A. "Value Consulting Pays Off," Purchasing, XLIX, October 10, 1960.

Rohan, T. M. "New Ideas Cut Buying Costs . . . Purchase Analysis Team Breaks Precedent To Trim Costs," Iron Age, CLXXXVII, February 23, 1961.

"Save \$ with Purchasing Research," Purchasing, XXXIX, November, 1955.

"Sound Decisions Are Based on Sound Information," Purchasing, XLVII, September 28, 1959.

"Statistical Forecasts Minimize Commodity Market Risks," Purchasing, XLIV, April 14, 1958.

Stratton, George F. "The Management of Production in a Great Factory: Division of Responsibility and Authority in the General Electric Company's Shops," The Engineering Magazine, XXXIV, January, 1908.

Twyford, H. B. "Fundamental Requisites in Purchasing," The Engineering Magazine, LII, March, 1917.

Urwick, Lyndall F. "Fitting in the Specialist without Antagonizing the Line," Advanced Management, XVII, January, 1952.

"Value Analysis . . . A purchasing technique that is saving hundreds of thousands of dollars each year for the General Electric Company," Purchasing, XXVIII, June, 1950.

Ward, A. C. "The Purchasing Department of a Manufacturing Organization." The Engineering Magazine, XLVI, December, 1913.

"We Cut Purchasing Costs 3 Ways," Purchasing, XLII, June, 1957.

Wharton, H. M. "The Production System of the Westinghouse Electric and Manufacturing Company," The Engineering Magazine, XXXIV, March, 1908.

White, Herbert R. "Records for the Purchasing and Supply Department," The Engineering Magazine, XLVI, January, 1914.

Wright, Harold A. "The Fine Art of Buying," The World's Work, X, July, 1905.

Unpublished Material

Jones, James Graham, Jr. "A Situational Analysis of the Scope, Organizational Structure, and Function of Personnel Research in the Manufacturing Industry." Unpublished Ed.D. dissertation, Wayne University, Detroit, 1955.

McKinney, Tom H., Sykora, William A., and Valentine, Robert T. "A Study of Purchasing Administrators in the Metal Fabricating and Assembly Industries in Illinois, Indiana, Michigan, Ohio, Pennsylvania, and Wisconsin." Unpublished study by graduate students in the Department of Personnel and Production Administration, Michigan State University, 1960.

Miller, Stanley Simon. "Value Analysis in the Procurement of Materials," Unpublished D.C.S. dissertation, Graduate School of Business Administration, Harvard University, 1954.

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